INDEX.

VOL. CXXIV.

Illustrations.

Names.

A

AGAR, A. F., on Engineering Works Canteens, 491
Allison and Baltimore, Push-button Coal and Ash Hoists at, 254
America, Aeroplane Construction in, 489, 498
America, Naval Power-boat Construction in, 139
American Locomotives for United States Forces in France, 458
American Wooden Steamships, 332
Andrew Dunlop Tractor Wheel, 134, 135
Angell, R. S., Proposal for Chain Track Motor Vehicle, 181
Applegarth Tractor, 157
Armstrong, Sir W. G., Whitworth and Co., Loch Lomond Route of Mid-Scotland Ship Canal, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Arrol, Sir W., and Co.'s Five-ton Electric Goliath Cranes for France, 140, 142
Aspinall, Frank B., on the Latent Heat of Steam, 3, 25, 47, 58; (Letters) 162, 184, 279
Atkins, Harry F., Nine-inch Taper-turning Sliding Lathe, 43
Atkinson's Six-ton Steam Wagon, 494
Aultman Agricultural Tractor, 298
Australian Transcontinental Railway, 356, 362: (Paragraph) 384
Aveling and Porter Agricultural Tractor, 533
Ayrshire Dockyard Company's Reinforced Concrete Arched Keel Block, 345

B

BABCOCK and Wilcox Coal and Ash Plant at Osaka Electric Works, G. F. Zimmer, 115
Batter Tractors, 156, 157
Beamond, F. L., Chain Track, 183
Beeston Dual Device for Petrol or Gas, 178
Bennis, Ed., and Co., Pneumatic Ash-handling Plant, 103
Bertrams' Rubber Factory and Plant, 446, 468, 469
Blake Boiler, Wagon and Engineering Company's Narrow-gauge Self-discharging Wagon, 478
Boston, U.S.A., Submarine Tramway Tunnel, 230, 234, 235
Bourcier, P. G., on Aero-engine Connecting-rods, 167
Boyd, James, and Sons, Air Heater for Workshops, 502
Boydell Traction Engine, 111
Bretts' Patent Lifter Company, Drop Hammer Plant, 450, 452
Bridge, David, and Company, Cotton Baling and Sampling Machinery, 448, 467, 468
British Agricultural Tractors and Haulers, 512, 533, 553, 562
British and German Losses of Ships and Submarines, 556
British Merchant Vessels, Standardised, 267, 272, 273
Brook, E., Empress Electrical Engineering Works, Huddersfield, 342
Brown Brothers' Air Heater for Motor Car Carburetters, 480
Bumsted and Chandler Agricultural Motor and Plough, 533
Burma Mines Railway, Narrow-gauge Wagons, 478
Burrell Agricultural Tractors, 534
Burrell, G. A., and A. W. Gauger, on the Inflammability of Mixtures of Gases and Air, 168

C

CARLISLE, Locomotive Coaling Plant at, for London and North-Western Railway, 12, 18
Centiped Chain Track, 205
Churchill Machine Tool Company, Internal Cylinder Grinding Machine, 320
Copes Boiler Feed-water Regulator, 367
Cowans, Sheldon and Co., Locomotive Coaling Plant at Carlisle, 12, 18
Crawley Agrimotor, 534
Cummins, A. E., Cotton Baling and Sampling Machines, 448
Curtis Rateau Turbine Blading, the Deterioration of, A. Fenwick, 30, 60

D

DARLING, Chas. R., on Small Electric Furnaces and their Uses, 422
Davidson and Liversedge Gas Washer, 502
Davy Brothers' Steam Hydraulic Intensifier, 366
Dawson, Joseph, Suspension Bridges in New Zealand, 52, 56
Diplock Chain Track, Tractor, Lorry and Wagon, 223, 241, 242, 243, 250
Diplock Pedrail Tractor, 181, 182
Diplock Traction Engine, 158
Donovan and Company's Combined Switch, Wall Socket and Plug, 83
Doorakkers, G., on the Manufacture of Hardened Thread Gauges, 263, 290, 308, 354, 355, 390
Dudgeon, Miss E. C., and Mr. J. E. Newman, Experiments in Crop Production by Electric Discharge, 74

E

EDINBURGH, Gas-driven Omnibus for, 226
Edwards Tractor, 157, 158
Elswick, Fire and Salvage Boat for, 503
Empress Electrical Engineering Works, Huddersfield, E. Brook, 342
English Aeroplane Works, 257 (*Two-page Supplement, September 21st*, 1917)

F

FENWICK, A., on the Deterioration of Curtis Rateau Turbine Blading, 30, 60
Fiat Company, Turin, Testing Department, 503
Ford Cars, Conversion of, into Commercial Vehicles, 8
Forth and Clyde Ship Canal Schemes, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Foster, William, and Company's Steam and Oil Tractors, 553
Fowler, John, and Company's Motor Ploughs, 554, 562
French Railways, Conversion of Single Expansion to Compound Engines, 511 (*Two-page Supplement, December 14th*, 1917)

G

GALLENKAMP'S Resistance Furnace, 422
Garrett, Richard, and Sons, Agricultural Steam Tractors, 554, 555
General Electric Company's Plant for Driving 20in. Bar Mill, 186, 190
German Aeroplanes, 516, 518
Glover and Co.'s Plug Extractor for Shells, 7
Gray Three-ton Tractor, 299
Great Eastern Railway Train Control, 50
Great Northern Railway, Conversion of Compound Engines, 542, 547
Griffith, A. A., and G. J. Taylor, on the Use of Soap Films in Solving Torsion Problems, 536, 543, 546
Griffith Colliery Tub, Sanford-Day Ironworks and Manufacturing Company, 457
Guillaume Fender's Proposals for Chain Tractors, 136
Gwinnett's Chain Track Proposal for Tractor, 158

H

HAMPSON'S Rubber Washing Machine, 444, 445
Haughton, J. L., and D. Hanson, Further Notes on a High Temperature Thermostat, 322
Hawksley, Charles (Portrait), 492
Heusser, Wilfrid, Assaying and Chemical Balance, 192
Hetherington, John, and Sons, 15in. Gun Lathe, 213, 214
Hobbs' Artificial Hands and Arms, 334, 335, 351, 376
Hollings and Guest's Tube Roller-welding Machine, 524
Holmes, W. C., and Co.'s Centrifugal Type Gas Washers, 502
Holt Agricultural Chain Track Tractor, 243, 244
Hornsby Tractor, Roberts' Chain Track Fitted to, 202, 208, 221, 222, 223
Hunter and English, Portable Filter Bed Sand Washer, 44

I

IONIDES, A. C., on the Principles and Methods of a New System of Gas-firing, 320
Italian Submarine Chasers, 566

J

JUSTICE-JOHNSON Chain Track, Proposed Vehicles, 181

K

KENWORTHY, George, Practice in Bridge and Girder Yards from a Theoretical Standpoint, 5, 25, 48, 91; (Letters), 162, 248
Kershaw, J. B. C., Use of Waste Gases for Steam Generation, 25

L

LOCH LOMOND—*see* Mid-Scotland
Lodge-Newman and Lincluden Apparatus for Crop Production, 74
Lombard, A. O., Tractor, 183, 184, 244, 250
Lombard Log-Hauling Tractor, 205
London and North-Western Railway Locomotive Coaling Plant at Carlisle, 12, 18

M

McKENZIE, Holland and Westinghouse Power Signal Company's Mechanism for Operating Railway Signals, 124
McLarty, F. M., on Attachment of Spindles to Forged Steel Valves, 153
Madeley, Old Colliery Winding Engine at, 94, 98
Mansfield Railway, 401, 408
Marquis, F. W., on Tests of the Uniflow Engine for Road Vehicles, 276; (Letters), 333, 360, 384
"Marvel" Drill Chuck, Louis Wearden and Guylee, Limited, 54
Mercédès Car with Hornsby's Chain Track, 221
Michie-Golledge Coagulator, 421
Midland Railway Carriage and Wagon Works, Ambulance Train, 358 (*Two-page Supplement, October 26th*, 1917)
Mid-Scotland Ship Canal Schemes, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Mirrlees, Watson Caustic Soda Concentration Plant, 34, 44
Monometer Manufacturing Company's Oil-fired Case Hardening Furnace, 571

N

NEATH Tramways, Diaphragm Valve, 178
New Zealand, Suspension Bridge in, Joseph Dawson, 52, 56
North-British Locomotive Company's Tank Engines for the Paris-Orleans Railway, 43 (*Two-page Supplement, July 13th*, 1917)
North-Eastern Railway, Transporting a Heavy Casting, 413
Norway, Reinforced Concrete Shipbuilding in, 520, 524

O

OSAKA Electric Works, Coal and Ash Plant at, Babcock and Wilcox, 115

P

PAGE Tractor, 157
P.L.M. Railway, Conversion of Single-Expansion to Compound Engines, 511 (*Two-page Supplement, December 14th*, 1917)
Paris-Orleans Railway, British Built Locomotives for, 43 (*Two-page Supplement, July 13th*, 1917)
Paris, Protection of, Against Floods, 16
Pearn-Richards' Combined Surfacing, Boring, Milling and Drilling Machine, 118, 120
Perkins' Rubber Washing Machinery, 446
Phœnix Company's Log-Hauling Tractor, 204
"Pioneer" Road Sweeping and Loading Machine, F. Walters and Co., 96
Poland, The Industries of, 14
Purchas, A. W., on Air-lift Pumping, 446

Q

QUEBEC Bridge, 253, 336, 338, 381, 403, 426, (*Two-page Supplement, November 9th*, 1917)

R

RASTRICK'S Design for a Steamboat, 81; (Letters), 118, 228, 248, 279, 323
Rhodes, J., and Sons, 250-Ton Friction Screw Press, 43
Richards, Geo., and Co., Horizontal Boring Machines, 118, 120
Richardsons, Westgarth and Company's Experimental Apparatus for Producing High Vacuum, 557
Roberts' Chain Track and Tractor, 202, 203, 204, 221, 222, 223
Robinson, Thos., and Son, Vertical Band Sawing Machine, 412
Rochet-Schneider Car Fitted with Roberts' Chain Track, 203
Rogers, F., on the Acid Open-Hearth Process, 276
Rumely Three-Wheeled Tractor, 298
Ruston, Proctor and Co's Large Casting, 292

S

SANFORD-DAY Ironworks and Manufacturing Company, The Griffith Colliery Tub, 457
Shaw, Francis, and Co.'s Rubber Washing and Drying Machines, 444, 445, 467, 468
Simms, F. R., Ploughing Tractor, 183, 184
Sisson, W. D., Diving Globe for Salving Sunken Ships, 386, 389
Smith and Coventry's Bevel Gear Generating Machine, 82
Smith and Coventry's 42in. Plain Horizontal Milling Machine, 102
Smith and Coventry's Tool Works at Timperley, 470, 474
South-Eastern and Chatham Railway, New Locomotives on, 287, 294; (Letter), 323; (Correction), 326 (*Two-page Supplement, October 5th*, 1917)
Sterne Resilient Wheel, 184
Stirling's Regenerator and Hot-air Engine of 1816, 516, 517: (Letter), 537: (Specification), 567
Strachan and Henshaw's Telpher Coke Handling Plant, 430, 434
Stromeyer, C. E., on the Action of Caustic Liquors on Steel Plates, 496
Summerscales Rubber Machinery, 421, 422
Sydney, City and Suburban Electric Railways of, 144
Sykes, W. R. (Portrait), 319
Sykes—*see* also W. R. Sykes, &c.

T

TASMANIAN Great Lake Hydro-Electric Power Scheme, 69, 78 (*Two-page Supplement, July 27th*, 1917)
Towns, Herbert L., on Welding with Application to Automobile Engineering, 125, 147

V

VALERI, O., Longitudinal Sleepers for Railways and Tramways, 29
Virginian Railway, 312, 316

INDEX.

VOL. CXXIV.

Illustrations.

Names.

A

AGAR, A. F., on Engineering Works Canteens, 491
Allison and Baltimore, Push-button Coal and Ash Hoists at, 254
America, Aeroplane Construction in, 489, 498
America, Naval Power-boat Construction in, 139
American Locomotives for United States Forces in France, 458
American Wooden Steamships, 332
Andrew Dunlop Tractor Wheel, 134, 135
Angell, R. S., Proposal for Chain Track Motor Vehicle, 181
Applegarth Tractor, 157
Armstrong, Sir W. G., Whitworth and Co., Loch Lomond Route of Mid-Scotland Ship Canal, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Arrol, Sir W., and Co.'s Five-ton Electric Goliath Cranes for France, 140, 142
Aspinall, Frank B., on the Latent Heat of Steam, 3, 25, 47, 58; (Letters) 162, 184, 279
Atkins, Harry F., Nine-inch Taper-turning Sliding Lathe, 43
Atkinson's Six-ton Steam Wagon, 494
Aultman Agricultural Tractor, 298
Australian Transcontinental Railway, 356, 362: (Paragraph) 384
Aveling and Porter Agricultural Tractor, 533
Ayrshire Dockyard Company's Reinforced Concrete Arched Keel Block, 345

B

BABCOCK and Wilcox Coal and Ash Plant at Osaka Electric Works, G. F. Zimmer, 115
Batter Tractors, 156, 157
Beamond, F. L., Chain Track, 183
Beeston Dual Device for Petrol or Gas, 178
Bennis, Ed., and Co., Pneumatic Ash-handling Plant, 103
Bertrams' Rubber Factory and Plant, 446, 468, 469
Blake Boiler, Wagon and Engineering Company's Narrow-gauge Self-discharging Wagon, 478
Boston, U.S.A., Submarine Tramway Tunnel, 230, 234, 235
Bourcier, P. G., on Aero-engine Connecting-rods, 167
Boyd, James, and Sons, Air Heater for Workshops, 502
Boydell Traction Engine, 111
Bretts' Patent Lifter Company, Drop Hammer Plant, 450, 452
Bridge, David, and Company, Cotton Baling and Sampling Machinery, 448, 467, 468
British Agricultural Tractors and Haulers, 512, 533, 553, 562
British and German Losses of Ships and Submarines, 556
British Merchant Vessels, Standardised, 267, 272, 273
Brook, E., Empress Electrical Engineering Works, Huddersfield, 342
Brown Brothers' Air Heater for Motor Car Carburetters, 480
Bumsted and Chandler Agricultural Motor and Plough, 533
Burma Mines Railway, Narrow-gauge Wagons, 478
Burrell Agricultural Tractors, 534
Burrell, G. A., and A. W. Gauger, on the Inflammability of Mixtures of Gases and Air, 168

C

CARLISLE, Locomotive Coaling Plant at, for London and North-Western Railway, 12, 18
Centiped Chain Track, 205
Churchill Machine Tool Company, Internal Cylinder Grinding Machine, 320
Copes Boiler Feed-water Regulator, 367
Cowans, Sheldon and Co., Locomotive Coaling Plant at Carlisle, 12, 18
Crawley Agrimotor, 534
Cummins, A. E., Cotton Baling and Sampling Machines, 448
Curtis Rateau Turbine Blading, the Deterioration of, A. Fenwick, 30, 60

D

DARLING, Chas. R., on Small Electric Furnaces and their Uses, 422
Davidson and Liversedge Gas Washer, 502
Davy Brothers' Steam Hydraulic Intensifier, 366
Dawson, Joseph, Suspension Bridges in New Zealand, 52, 56
Diplock Chain Track, Tractor, Lorry and Wagon, 223, 241, 242, 243, 250
Diplock Pedrail Tractor, 181, 182
Diplock Traction Engine, 158
Donovan and Company's Combined Switch, Wall Socket and Plug, 83
Doorakkers, G., on the Manufacture of Hardened Thread Gauges, 263, 290, 308, 354, 355, 390
Dudgeon, Miss E. C., and Mr. J. E. Newman, Experiments in Crop Production by Electric Discharge, 74

E

EDINBURGH, Gas-driven Omnibus for, 226
Edwards Tractor, 157, 158
Elswick, Fire and Salvage Boat for, 503
Empress Electrical Engineering Works, Huddersfield, E. Brook, 342
English Aeroplane Works, 257 (*Two-page Supplement, September 21st*, 1917)

F

FENWICK, A., on the Deterioration of Curtis Rateau Turbine Blading, 30, 60
Fiat Company, Turin, Testing Department, 503
Ford Cars, Conversion of, into Commercial Vehicles, 8
Forth and Clyde Ship Canal Schemes, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Foster, William, and Company's Steam and Oil Tractors, 553
Fowler, John, and Company's Motor Ploughs, 554, 562
French Railways, Conversion of Single Expansion to Compound Engines, 511 (*Two-page Supplement, December 14th*, 1917)

G

GALLENKAMP'S Resistance Furnace, 422
Garrett, Richard, and Sons, Agricultural Steam Tractors, 554, 555
General Electric Company's Plant for Driving 20in. Bar Mill, 186, 190
German Aeroplanes, 516, 518
Glover and Co.'s Plug Extractor for Shells, 7
Gray Three-ton Tractor, 299
Great Eastern Railway Train Control, 50
Great Northern Railway, Conversion of Compound Engines, 542, 547
Griffith, A. A., and G. J. Taylor, on the Use of Soap Films in Solving Torsion Problems, 536, 543, 546
Griffith Colliery Tub, Sanford-Day Ironworks and Manufacturing Company, 457
Guillaume Fender's Proposals for Chain Tractors, 136
Gwinnett's Chain Track Proposal for Tractor, 158

H

HAMPSON'S Rubber Washing Machine, 444, 445
Haughton, J. L., and D. Hanson, Further Notes on a High Temperature Thermostat, 322
Hawksley, Charles (Portrait), 492
Heusser, Wilfrid, Assaying and Chemical Balance, 192
Hetherington, John, and Sons, 15in. Gun Lathe, 213, 214
Hobbs' Artificial Hands and Arms, 334, 335, 351, 376
Hollings and Guest's Tube Roller-welding Machine, 524
Holmes, W. C., and Co.'s Centrifugal Type Gas Washers, 502
Holt Agricultural Chain Track Tractor, 243, 244
Hornsby Tractor, Roberts' Chain Track Fitted to, 202, 208, 221, 222, 223
Hunter and English, Portable Filter Bed Sand Washer, 44

I

IONIDES, A. C., on the Principles and Methods of a New System of Gas-firing, 320
Italian Submarine Chasers, 566

J

JUSTICE-JOHNSON Chain Track, Proposed Vehicles, 181

K

KENWORTHY, George, Practice in Bridge and Girder Yards from a Theoretical Standpoint, 5, 25, 48, 91; (Letters), 162, 248
Kershaw, J. B. C., Use of Waste Gases for Steam Generation, 25

L

LOCH LOMOND—*see* Mid-Scotland
Lodge-Newman and Lincluden Apparatus for Crop Production, 74
Lombard, A. O., Tractor, 183, 184, 244, 250
Lombard Log-Hauling Tractor, 205
London and North-Western Railway Locomotive Coaling Plant at Carlisle, 12, 18

M

McKENZIE, Holland and Westinghouse Power Signal Company's Mechanism for Operating Railway Signals, 124
McLarty, F. M., on Attachment of Spindles to Forged Steel Valves, 153
Madeley, Old Colliery Winding Engine at, 94, 98
Mansfield Railway, 401, 408
Marquis, F. W., on Tests of the Uniflow Engine for Road Vehicles, 276; (Letters), 333, 360, 384
"Marvel" Drill Chuck, Louis Wearden and Guylee, Limited, 54
Mercédès Car with Hornsby's Chain Track, 221
Michie-Golledge Coagulator, 421
Midland Railway Carriage and Wagon Works, Ambulance Train, 358 (*Two-page Supplement, October 26th*, 1917)
Mid-Scotland Ship Canal Schemes, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Mirrlees, Watson Caustic Soda Concentration Plant, 34, 44
Monometer Manufacturing Company's Oil-fired Case Hardening Furnace, 571

N

NEATH Tramways, Diaphragm Valve, 178
New Zealand, Suspension Bridge in, Joseph Dawson, 52, 56
North-British Locomotive Company's Tank Engines for the Paris-Orleans Railway, 43 (*Two-page Supplement, July 13th*, 1917)
North-Eastern Railway, Transporting a Heavy Casting, 413
Norway, Reinforced Concrete Shipbuilding in, 520, 524

O

OSAKA Electric Works, Coal and Ash Plant at, Babcock and Wilcox, 115

P

PAGE Tractor, 157
P.L.M. Railway, Conversion of Single-Expansion to Compound Engines, 511 (*Two-page Supplement, December 14th*, 1917)
Paris-Orleans Railway, British Built Locomotives for, 43 (*Two-page Supplement, July 13th*, 1917)
Paris, Protection of, Against Floods, 16
Pearn-Richards' Combined Surfacing, Boring, Milling and Drilling Machine, 118, 120
Perkins' Rubber Washing Machinery, 446
Phœnix Company's Log-Hauling Tractor, 204
"Pioneer" Road Sweeping and Loading Machine, F. Walters and Co., 96
Poland, The Industries of, 14
Purchas, A. W., on Air-lift Pumping, 446

Q

QUEBEC Bridge, 253, 336, 338, 381, 403, 426, (*Two-page Supplement, November 9th*, 1917)

R

RASTRICK'S Design for a Steamboat, 81; (Letters), 118, 228, 248, 279, 323
Rhodes, J., and Sons, 250-Ton Friction Screw Press, 43
Richards, Geo., and Co., Horizontal Boring Machines, 118, 120
Richardsons, Westgarth and Company's Experimental Apparatus for Producing High Vacuum, 557
Roberts' Chain Track and Tractor, 202, 203, 204, 221, 222, 223
Robinson, Thos., and Son, Vertical Band Sawing Machine, 412
Rochet-Schneider Car Fitted with Roberts' Chain Track, 203
Rogers, F., on the Acid Open-Hearth Process, 276
Rumely Three-Wheeled Tractor, 298
Ruston, Proctor and Co's Large Casting, 292

S

SANFORD-DAY Ironworks and Manufacturing Company, The Griffith Colliery Tub, 457
Shaw, Francis, and Co.'s Rubber Washing and Drying Machines, 444, 445, 467, 468
Simms, F. R., Ploughing Tractor, 183, 184
Sisson, W. D., Diving Globe for Salving Sunken Ships, 386, 389
Smith and Coventry's Bevel Gear Generating Machine, 82
Smith and Coventry's 42in. Plain Horizontal Milling Machine, 102
Smith and Coventry's Tool Works at Timperley, 470, 474
South-Eastern and Chatham Railway, New Locomotives on, 287, 294; (Letter), 323; (Correction), 326 (*Two-page Supplement, October 5th*, 1917)
Sterne Resilient Wheel, 184
Stirling's Regenerator and Hot-air Engine of 1816, 516, 517: (Letter), 537: (Specification), 567
Strachan and Henshaw's Telpher Coke Handling Plant, 430, 434
Stromeyer, C. E., on the Action of Caustic Liquors on Steel Plates, 496
Summerscales Rubber Machinery, 421, 422
Sydney, City and Suburban Electric Railways of, 144
Sykes, W. R. (Portrait), 319
Sykes—*see* also W. R. Sykes, &c.

T

TASMANIAN Great Lake Hydro-Electric Power Scheme, 69, 78 (*Two-page Supplement, July 27th*, 1917)
Towns, Herbert L., on Welding with Application to Automobile Engineering, 125, 147

V

VALERI, O., Longitudinal Sleepers for Railways and Tramways, 29
Virginian Railway, 312, 316

W

WALKER, John, Proposed Chain Tractor, 180
Wallace, W. M., on the Critical Speeds of Loaded Shafts, 246
Wallis 3½-ton Three-Wheeled Tractor, 299
Walters, F., and Co., Road Sweeping Machine, 96
Warrington Gasworks, Strachan and Henshaw's Telpher Coke Handling Plant, 430, 434
Wearden, Louis, and Guylee, The "Marvel" Drill Chuck, 54
Welsh Railways, Co-ordination Among, 189
Westinghouse Brake, Automatic Train Control for, 50
White and Poppe Type Carburetter, 178
Wild-Barfield Electrical Method of Steel Hardening, 82
Wilson, John H., and Co.'s Electric Winch, 525
Wolff, Dr. E. B., on Failure of Boiler Plates and Stresses in Riveted Joints, 296, 456
Woodbridge Tractor, 156, 157
Wright, J., and Co.'s Furnaces for the Heat Treatment of Metals, 146, 147
W. R. Sykes Signal Interlocking Company, Apparatus for Train Control, 50, 319

Z

ZEPPELIN, Captured, Engine Gondolas of, 392
Zimmer, George Frederick, on Coal and Ash Plant at Osaka Electric Works, 115

Subjects.

A

ACID Open-Hearth Process, F. Rogers, 276
Action of Caustic Liquors on Steel Plates, C. E. Stromeyer, 496
Aero Engine Connecting-rods, P. G. Bourcier, 167
Aeroplane Construction in America, 489, 498
Aeroplane Works, An English, 257 (*Two-page Supplement, September 21st*, 1917)
Aeroplanes, Recent German, Notes on, 516, 518
Agricultural Tractors and Haulers, British, 512, 533, 553, 562
Air Heater for Motor Car Carburetters, Brown Brothers, Limited, 480
Air Heater for Workshops, J. Boyd and Sons, 502
Air-lift Pumping, A. W. Purchas, 446
Air Pump for High Vacuum Experiments, 557
Ambulance Train for Continental Service, 358 (*Two-page Supplement, October 26th*, 1917)
Arched Keel Block, Reinforced Concrete, Ayrshire Dockyard Company, 345
Ash-handling Plant, Pneumatic, Ed. Bennis and Co., 103
Assaying and Chemical Balance, Wilfrid Heusser, 192
Attachment of Spindles to Forged Steel Valves, F. M. McLarty, Jun., 153
Automatic Drop Bottom Mine Car, Sanford-Day Ironworks and Manufacturing Company, 457
Automatic Train Control, W. R. Sykes' Signal Interlocking Company, 50, 319
Automobile Engineering, Welding with Application to, Herbert L. Towns, 125, 147

B

BALANCE, Assaying and Chemical, Wilfrid Heusser, 192
Baling and Sampling Machines, Cotton, D. Bridge and Co., 448
Band Saw—*see* Sawing
Bar Mill, 20in., Motor-driven, General Electric Company, 186, 190
Battery Signals—*see* Railway Signals
Bevel-cutting Machines—*see* Machine Tools
Boiler Feed-water Regulator, Copes, 367
Boiler Plates, Failure of, and Stresses in Riveted Joints, Dr. E. B. Wolff, 296, 456
Boring Machines—*see* Machine Tools
Brakes, Westinghouse and Vacuum, Automatic Train Control for, W. R. Sykes' Signal Interlocking Company, 50
Bridge and Girder Yards, Practice in, &c., G. Kenworthy, 5, 25, 48, 91; (Letters), 162, 248
Bridge, Quebec, The New, 253, 336, 338, 381, 403, 426 (*Two-page Supplement, November 9th*, 1917)
Bridges for Mid-Scotland Canal, 558 (*Two-page Supplement, December 28th*, 1917)
Bridges, Suspension, in New Zealand, Joseph Dawson, 52, 56
Bulb Experiments on Hot Bulb Engines, 112

C

CANAL Schemes, Mid-Scotland, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Canteen, Engineering Works, A. F. Agar, 491
Canteens at Munitions Works, 268, 269
Carburetter, White and Poppe, 178
Carburetters, Motor Car, Air Heater for, Brown Brothers, Limited, 480
Cars, Ford, Conversion of, into Commercial Vehicles, 8
Case Hardening Furnace, Monometer Manufacturing Company, 571
Casting, Heavy, Transporting by North-Eastern Railway, 413
Casting, A Large, Ruston, Proctor and Co., Limited, 292
Caterpillar or Paddle-wheel Traction Engine, 205
Caterpillar—*see also* Chain Track Tractor
Caustic Soda Concentration Plant, Mirrlees, Watson Company, 34, 44
Centenary of Heat Regenerator and Stirling's Engine, 1816, 516, 517; (Letter), 537; (Specification), 567
Centrifugal Type Gas Washers, W. C. Holmes and Co., 502
Chain Track Tractor, Evolution of the, 111, 134, 135, 156, 181, 202, 221, 241, 250; (Letter), 184
Chuck, Drill, the "Marvel," Louis Wearden and Guylee, Limited, 54
Circular Arcs, Simple Calculations of, 114
Coal and Ash Hoists, Push-button, 254
Coal and Ash Plant at Osaka Electric Works, Babcock and Wilcox, 115
Coaling Plant, Locomotive, at Carlisle, for London and North-Western Railway, 12, 18
Coke Handling Plant at Warrington Gasworks, Strachan and Henshaw, Limited, 430, 434
Colliery Tub—*see* Automatic Mine Car
Concrete, Reinforced, Arched Keel Block, Ayrshire Dockyard Company, 345
Concrete, Reinforced, Shipbuilding in Norway, 520, 524
Concrete, Transmission of, by Air and Steam, 159, 164
Connecting-rods, Aero-engine, P. G. Bourcier, 167
Conversion of Ford Cars into Commercial Vehicles, 8
Conversion of Locomotives—*see* Locomotives
Cotton Baling and Sampling Machines, D. Bridge and Co., 448
Cranes, for France, Five-ton Electric Goliath, Sir W. Arrol and Co., Limited, 140, 142
Critical Speeds of Loaded Shafts, W. M. Wallace, 246

D

DETERIORATION of Curtis Rateau Turbine Blading, A. Fenwick, 30, 60
Diving Globe for Salving Sunken Ships, W. D. Sisson, 386, 389
Drill Chuck, The "Marvel," Louis Wearden and Guylee, Limited, 54
Drop Hammer Plant Driven by Waste Heat, Bretts' Patent Lifter Company, 450, 452

E

ELECTRICAL MATTERS:
Bar Mill, 20in., Electrically-driven, General Electric Company, 186, 190
Coal and Ash Plant at Osaka Electric Works, Babcock and Wilcox, 115
Electric Discharge and Crop Production, 74
Empress Works, E. Brook, 342
Furnaces, Small Electric, and their Uses, Chas. R. Darling, 422
Steel Hardening, Electric Method of, Wild-Barfield, 82
Switch, Wall Socket and Plug, Combined, Donovan and Co., 83
Winch, Electric, J. H. Wilson and Co., 525

ENGINES AND MOTORS:
Atmospheric Colliery Winding Engine, 94, 98
Hot Air Engine and Regenerator of 1816, Stirling's, 516, 517; (Letter), 537; (Specification), 567
Hot Bulb Engines, 112; (Letters), 149, 161
Locomotives—*see* Locomotives
Traction Engine, Boydell, 111
Traction Engine, B. J. Diplock, 158
Uniflow Engine for Road Vehicles, Tests at Ohio, F. W. Marquis, 276; (Letters), 333, 360, 384

ENGINEERING Works Canteens, A. F. Agar, 491
Evolution of the Chain Track Tractor, 111, 134, 135, 156, 181, 202, 221, 241, 250; (Letter), 184

F

FAILURE of Boiler Plates—*see* Boiler Plates
Feed-water Regulator, Copes, 367
Filter Bed Sand Washer, Portable, Hunter and English, Limited, 44
Fire and Salvage Boat for Elswick, 503
Floods, Protection of Paris Against, 16
Friction Screw Press, 250-Ton, J. Rhodes and Sons, Limited, 43
Furnace, Oil-fired Case-hardening, Monometer Manufacturing Company, 571
Furnaces for the Heat Treatment of Metals, J. Wright and Co., 146, 147
Furnaces—*see also* Electrical Matters

G

GAS-DRIVEN Motor Vehicles, 178, 226
Gas-driven Omnibus for Edinburgh, 226
Gases and Air, Inflammability of Mixtures of, G. A. Burrell and A. W. Gauger, 168
Gas-firing, A New System, Principles and Methods of, A. C. Ionides, 320
Gas Washers, Centrifugal Type, W. C. Holmes and Co., 502
Gauges, Hardened Thread, Manufacture of, G. Doorakkers, 263, 290, 308, 354, 355, 390
Gun Lathe—*see* Machine Tools

H

HEAT of Steam, The Latent, F. B. Aspinall, 3, 25, 47, 58; (Letters), 162, 184, 279
Heat Treatment of Metals, Furnaces for, J. Wright and Co., 146, 147
Heating of Industrial Buildings, James Boyd and Sons, 502
High Vacuum Experiments at Richardsons, Westgarth and Co., 557
Hot Air and Hot Bulb Engines—*see* Engines
Hydraulic, Steam, Intensifier, Davy Brothers, Limited, 366
Hydro-electric Power Scheme, Tasmanian Great Lake, 69, 78 (*Two-page Supplement, July 27th*, 1917)

I

INDUSTRIES of Poland, 14
Inflammability of Mixtures of Gases and Air, G. A. Burrell and A. W. Gauger, 168
Intensifier, Steam Hydraulic, Davy Brothers, Limited, 366

L

LATENT Heat of Steam, F. B. Aspinall, 3, 25, 47, 58; (Letters), 162, 184, 279
Lathes—*see* Machine Tools
Locomotives for American Military Railways in France, 458
Locomotive Coaling Plant at Carlisle, London and North-Western Railway, 12, 18
Locomotive, P.L.M., Conversion of Single Expansion to Compound, 511 (*Two-page Supplement, December 14th*, 1917)
Locomotive, British Built Tank, for the Paris-Orleans Railway, 43 (*Two-page Supplement, July 13th*, 1917)
Locomotives on the Great Northern Railway, Conversion of, 542, 547
Locomotives, South-Eastern and Chatham Railway, 287, 294; (Letter), 323; (Correction) 326 (*Two-page Supplement, October 5th*, 1917)
Longitudinal Sleepers for Railways and Tramways, Olindo Valeri, 29
Losses of Ships—*see* Ships

M

MACHINE TOOLS:
Bevel Gear Generating Machine, Smith and Coventry, Limited, 82
Gun Lathe, 15in., Motor Driven, John Hetherington and Sons, Limited, 213, 214
Horizontal Boring Machines, Two New, Geo. Richards and Co., 118, 120
Internal Cylinder Grinding Machine, Churchill Machine Tool Company, 320
Milling Machine, 42in. Plain Horizontal, Smith and Coventry, 102
Nine-inch Taper Turning Sliding Lathe, Harry F. Atkins, 43
Press, 250-Ton Friction Screw, J. Rhodes and Sons, Limited, 43

MANUFACTURE of Hardened Thread Gauges, G. Doorakkers, 263, 290, 308, 354, 355, 390

MAPS:
Australia, Transcontinental Railway, 356
Cardiff, Railways in the Vicinity of, 189
Coal Distribution Areas of Great Britain, 37
Forth and Clyde Canal, 465, 466
Mansfield Railway, 401
Paris and its Environs, Protection of, Against Floods, 16
Poland, Coal, Iron and Oil Fields, 14
Sydney, Existing and Proposed Suburban Railways, 145
West Virginia Coalfields and Virginian Railway, 312

MECHANICAL Arms for Maimed Soldiers, E. W. Hobbs, 334, 335, 351, 376
Metals, Furnaces for the Heat Treatment of, John Wright and Co., 146, 147
Milling Machines—*see* Machine Tools
Mine Car—*see* Automatic
Motor Car Carburetters, Air Heater for, Brown Brothers, Limited, 480
Motor Vehicles, Gas-driven, 178
Munitions Works, Canteens at, 268, 269

N

NARROW-GAUGE Rolling Stock for Burma, Blake Boiler, Wagon and Engineering Company, 478

O

OIL-FIRED Case-hardening Furnace, Monometer Manufacturing Company, 571
Omnibus, Gas-driven, for Edinburgh, 226
Oxy-Acetylene Welding—*see* Welding

P

PETROL or Gas as Motor Fuel, Beeston Dual Device, 178
Petrol Tractor on the Farm, 298
Plug Extractor for Shells, M. Glover and Co., 7
Pneumatic Ash Handling Plant, Ed. Bennis and Co., 103
Portable Filter Bed Sand Washer, Hunter and English, Limited, 44
Portrait, Charles Hawksley, 492
Portrait, W. R. Sykes, 319
Practice in Bridge and Girder Yards, &c., G. Kenworthy, 5, 25, 48, 91; (Letters), 162, 248
Presses—*see* Machine Tools
Production and Preparation of Raw Rubber, 399, 421, 444, 467
Protection of Paris Against Floods, 16
Push Button Coal and Ash Hoists, American, 254

R

RAILWAY, Australian Transcontinental, 356, 362; (Paragraph), 384
Railway, Mansfield, 401
Railway, Narrow Gauge, Wagons for Burma, 478
Railway Signals, Mechanism for Operating, McKenzie, Holland and Westinghouse Power Signal Company, 124
Railway, The Virginian, 312, 316
Railways of Sydney, City and Suburban Electric, 144
Railways and Tramways, Longitudinal Sleepers for, O. Valeri, 29
Railways, Welsh, Co-ordination Among, 189
Regenerator and Hot Air Engine of 1816, Stirling's, 516, 517; (Letter), 537; (Specification), 567
Reinforced Concrete Arched Keel Block, Ayrshire Dockyard Company, 345
Reinforced Concrete Shipbuilding in Norway, 520, 524
Road Sweeping and Loading Machine, F. Walters and Co., 96
Roller Welding Tubes Machine, Hollings and Guest, Limited, 524
Rubber, Raw, The Production and Preparation of, 399, 421, 444, 467

S

SAW Mill at an Aeroplane Works, 257
Sawing Machine, Vertical Band, Thos. Robinson and Son, Limited, 412
Shafts, Loaded, Critical Speeds of, W. M. Wallace, 246
Shells, Plug Extractor for, M. Glover and Co., 7
Ship Canal Schemes, Mid-Scotland, 465, 538

SHIPS AND SHIPPING MATTERS:
General:
Losses of Ships and Submarines, 556
Reinforced Concrete Shipbuilding in Norway, 520, 524
Sunken Ships, New Device for Raising, W. D. Sisson, 386, 389

British Navy:
Submarine Chasers for British Admiralty, American Built, 139

Foreign:
Naval Power Boat Construction in America, 139
Submarine Chasers, American Built, 139
Submarine Chasers, Italian, 566

Miscellaneous Vessels:
American Wooden Steamships, 332
Rastrick's Design for a Steamboat, 81; (Letters), 118, 228, 248, 279, 323

SIGNALS—*see* Railway Signals
Six-ton Steam Wagon, Atkinson and Co., 494
Sleepers, Longitudinal, for Railways and Tramways, O. Valeri, 29
Soap Films, Use of, in Solving Torsion Problems, A. A. Griffiths and G. I. Taylor, 536, 543, 546
Soda, Caustic, Concentration Plant, Mirrlees, Watson Company, 34, 44
Soldiers, Maimed, Mechanical Arms for, E. W. Hobbs, 334, 335, 351, 376
Speeds of Loaded Shafts, Critical, W. M. Wallace, 246
Spindles, Attachment of, to Forged Steel Valves, F. M. McLarty, jun., 153
Standardised British Merchant Vessels, 267, 272, 273
Steam Generation, Use of Waste Gases for, J. B. C. Kershaw, 25
Steam Hydraulic Intensifier, Davy Brothers, Limited, 366
Steam, The Latent Heat of, F. B. Aspinall, 3, 25, 47, 58; (Letters), 162, 184, 279
Steam Wagon—*see* Wagon
Steel Hardening, Electric Method, Wild-Barfield, 82
Steel Manufacture, The Acid Open-Hearth Process, F. Rogers, 276
Steel Plates, Action of Caustic Liquors on, C. E. Stromeyer, 496
Submarine Tramway Tunnel at Boston, 230, 234, 235

T

TELPHER Coke-handling Plant—*see* Coke
Testing Department of the Fiat Company, Turin, 503
Thermostat, A High Temperature, Further Notes on, J. L. Haughton and D. Hanson, 322
Tool Works at Timperley, Smith and Coventry, 470, 474
Torsion Problems, Use of Soap Films in Solving, A. A. Griffith and G. I. Taylor, 536, 543, 546
Traction Engines—*see* Engines
Tractor, Chain Track, Evolution of the, 111, 134, 135, 156, 181, 202, 221, 241, 250; (Letter), 184
Tractor, Petrol, on the Farm, 298
Tractors and Haulers, British Agricultural, 512, 533, 553, 562
Train, Ambulance—*see* Ambulance
Train Control—*see* Automatic
Transmission of Concrete by Air and Steam, 159, 164
Transporting a Heavy Casting, 413
Tube Roller-welding Machine, Hollings and Guest, Limited, 524
Tunnel, Submarine, at Boston, U.S.A., 230, 234, 235
Turbine Blading, Curtis Rateau, The Deterioration of, A. Fenwick, 30, 60

U

UNIFLOW—*see* Engines
Use of Soap Films—*see* Soap
Use of Waste Gases for Steam Generation, J. B. C. Kershaw, 27

V

VALVE, Pressure Regulating, Neath Tramways, 178

324126

W

WAGON, Narrow Gauge, Self-discharging, for Burma, Blake Boiler, Wagon and Engineering Company, 478
Wagon, Six-ton Steam, Atkinson and Co., 494
Washer—*see* Gas Washer
Waste Gases for Steam Generation, Use of, J. B. C. Kershaw, 25
Water Softening Plant—*see* Australian Transcontinental Railway, 356, 362; (Paragraph), 384
Welding with Application to Automobile Engineering, Herbert L. Towns, 125, 147
Wheel Tractor, Andrew Dunlop, 134, 135
Winch, Electric, J. H. Wilson and Co., 525
Works, Aeroplane, An English, 257 (*Two-page Supplement, September 21st*, 1917)
Works, Electrical—*see* Electrical Matters
Works, New Tool, at Timperley, Smith and Coventry, 470, 474
Workshops, Air Heater for, J. Boyd and Sons, 502

Z

ZEPPELIN, Captured, Engine Gondolas of, 392

Supplements.

AMBULANCE Train for Continental Service Built at Midland Railway Carriage and Wagon Works (October 26th, 1917)

English Aeroplane Factory (September 21st, 1917)

Great Lake Hydro-Electric Power Scheme, Tasmania (July 27th, 1917)
Mid-Scotland Ship Canal—Locks and Bridges on Proposed Loch Lomond Route, Sir W. G. Armstrong, Whitworth and Co., Limited (December 28th, 1917)

P.L.M. Railway — Four-cylinder Compound Locomotive (Converted) (December 14th, 1917)

Quebec Bridge—Hoisting the Central Span (November 9th, 1917)

South-Eastern and Chatham Railway Six-coupled Goods Locomotive (October 5th, 1917)
Tank Locomotive for the Paris-Orleans Railway, North British Locomotive Company, Limited (July 13th, 1917)

Miscellaneous Articles.

A

ACCIDENTS:
Nine Months' Railway Accidents, 297
Railway Accidents in 1916, 169
Ratho Railway Accident, 63
Vanguard Disaster, 57
ACID Process—*see* Iron and Steel
Action of Caustic Liquors, &c.—*see* Iron and Steel
Admiralty Appeal to Workers, 51

AERONAUTICS:
Advisory Committee for Aeronautics, Report, 72
Aeroplane Production in America, 489, 498
Air Reprisals, 340
American Aviation Engine, 311
An Aeroplane Works, 257 (*Two-page Supplement, September 21st*, 1917)
Aero-engine Connecting-rods, P. G. Bourcier, 167
Aeronautical Societies—*see* Associations
Duties of the Air Forces, 35
German Aeroplanes, Constructional Details, 516
Output of Aeroplanes, L. Blin Desbleds, 508
River Diversion for Aerodrome at Hanworth Park, 366
Training of Aeronautical Engineers, Dr. R. M. Walmsley and Mr. C. E. Luard, 6
Zeppelin, Engine-room Gondola of, 392

AERO-STEAM Railway Traction, Pierre Guedon, 425
Agar, A. F., on Engineering Works Canteens, 491
Agricultural Experiments — *see* Electrical Matters
Agricultural Machinery Department, Ministry of Munitions, 45
Agricultural Tractors and Haulers, British, 512, 533, 553, 562
Agricultural Tractors, Petrol, Aultman, Rumely, Wallis, Gray, &c., 298
Agricultural Tractors—*see also* Tractor
Agriculture, Application of Science to, 412
Ahrons, E. L., on the Shrinkage Allowance for Locomotive Tires, 263
Ahrons, E. L., on Types of Irish Locomotives, 162; (Letter), 184
Air Engines—*see* Engines
Air Heater for Carburetters—*see* Motor Vehicles
Air Heater for Workshops, J. Boyd and Sons, 503
Air Pumps and Air Lift Pumps—*see* Pumps
Alcohol, Fuel, 232
Alcohol, Fuel, in Australia, 278
Alcohol as a Source of Power, W. T. Rowe, 471
Almanacs and Diaries, 572
Aluminium, Effect of Heat on, Dr. H. C. H. Carpenter and Mr. L. Taverner, 274
Aluminium Production in the West Highlands, 463, 525
Ambulance Trains—*see* Railways

AMERICAN ENGINEERING NEWS:
18, 130, 174, 300
Activated Sludge Process for Slaughter-house Wastes, 130
Advisory Committee on Terminal Facilities, 174
Alcohol from Garbage, 130
American Dockyard Works, 174
Bridge Erection by Locomotive Cranes, 301
Coal Shipping Pier at an American Atlantic Port, 300
Drainage of Irrigated Lands, 18
Goods Stations for Electric Railways, 300
Large Dockyard Crane, 174
Potash as a By-product of Portland Cement, 300, 540
Spray Irrigation for Vegetable Gardens, 300
Ten-coupled Locomotives, 174
Tests of Steel Columns, 301
Water Tube Fire-box for Locomotives, 18
AMERICAN Engineers and the War, 298
American Inventors Attack the Anti-Submarine Problem, 550
American Military Engineers in France, 419
Anthony, C., on Air-lift Pumping, 526; (Letter), 556
Apotheosis of the Destroyer, 499
Apprentices, Education of, 76
Arched Keel Block, Reinforced Concrete, Ayrshire Dockyard Company, Limited, 345
Architecture, Naval—*see* Ships, Naval Matters
Argentina, Sugar Machinery for, 171
Ariadne—*see* Ships, British Navy
Ash Handling Plant, Pneumatic, Ed. Bennis and Co., 103
Aspinall, Frank B., on the Latent Heat of Steam, 3, 25, 47, 58; (Letters), 162, 184, 279
Assaying and Chemical Balance, Wilfred Heusser, 192

ASSOCIATIONS, INSTITUTIONS & SOCIETIES:

Association of Engineers, Manchester:
Briquetting Metal Turnings, Debate, 525
British and Foreign Patent Law Reform, V. A. B. Hughes, 425
Engineering Works Canteens, A. F. Agar, 491
Presidential Address, Wire Manufacture, J. B. Bedson, 334
Worm Gearing, F. J. Bostock, 393

Association of Railway Locomotive Engineers:
Heating Surface of Boilers for Locomotives, 45

Institute, Aeronautical:
Output of Aeroplanes, Conference, L. Blin Desbleds, 508

Institute, Concrete:
Conditions Essential to the Corrosion of Iron, Dr. Newton Friend, 550

Institute, The Iron and Steel:
Acid Open-Hearth Process, Dr. F. Rogers, 276, 297
Autumn Meeting, 198, 239, 244, 265, 276, 296, 310
Eggertz Test for Combined Carbon in Steel, J. H. Whiteley, 297
Failure of Boiler Plates in Service, &c., Dr. E. B. Wolff, 296
Heat Treatment of Grey Cast Iron, J. E. Hurst, 266
Influence of Heat Treatment on the Electrical and Thermal Resistivity, &c., of Some Steels, E. D. Campbell and W. C. Dowd, 297
Investigation upon a Cast of Acid Open-Hearth Steel, T. D. Morgans and F. Rogers, 297
Labour and Wages, 305
Microstructure of Chemically Pure Iron between Ar_3 and Ar_2, 297
New Experiments on Shock Tests and on the Determination of Resilience, Georges Charpy and Andre Cornu-Thenard, 244, 265
Present Knowledge and Practice in regard to the Briquetting of Iron Ores, G. Barrett and T. B. Rogerson, 265, 299, 310
Reports of Mechanical and Metallurgical Section of Committee, 266

Institute of Metals:
Autumn Meeting, 215, 252, 254, 274; Programme, 215
Effects of Heat at Various Temperatures on the Rate of Softening of Cold Rolled Aluminium Sheets, Dr. H. C. H. Carpenter and Mr. L. Taverner, 274
Effect of Hydrostatic Pressure on Metals, Professor Zay Jeffries, 275
Experiments on the Fatigue of Brasses, Dr. B. Parker Haigh, 252
Fuel Economy Possibilities in Brass Melting Furnaces, L. G. Harvey, 275

ASSOCIATIONS, INSTITUTIONS & SOCIETIES (*continued*):

Institute of Metals (*continued*):
Gas Firing, Principles and Methods of a New System of, A. C. Ionides, 275, 320
Hardness and Hardening, Professor T. Turner, 252, 254
High Temperature Thermostat, Further Notes on, J. L. Haughton and D. Hanson, 275, 322
Screen for Comparing or Standardising the Grain Size of Brass, Owen W. Ellis, 275
Use of Chromic Acid and Hydrogen Peroxide as an Etching Agent, S. W. Miller, 275

Institute, Textile:
Autumn Conference at Preston, 331

Institution of Automobile Engineers:
Design of a Small Agricultural Tractor, A. E. L. Chorlton, 545
Fuse Inspection, A. W. Reeves and Cecil Kimber, 52
COVENTRY BRANCH—
Welding with Application to Automobile Engineering, H. L. Towns, 125, 147

Institution of Civil Engineers:
Centenary of the "Civils," 563
Engineering Training, Meeting, 364
Examination for Associate Membership, 567
Presidential Address, Harry E. Jones, 406
Recent Developments in By-Product Coking, G. B. Walker, 509

Institution of Electrical Engineers:
Presidential Address, C. H. Wordingham, 435

Institution of Mechanical Engineers:
Comparison of Working Costs of Principal Prime Movers, Oswald Wans, 355, 363, 368, 380
Notes on Air-lift Pumping, A. W. Purchas, 446
Thomas Hawksley Lecture, Capt. H. Riall Sankey on Heat Engines, 489
Use of Soap Films in Solving Torsion Problems, A. A. Griffiths and G. I. Taylor, 536, 546

Institution of Naval Architects:
Scholarship in Naval Architecture, 418

Institution, North-East Coast, of Engineers and Shipbuilders:
Sub-Committee's Report on Methods of Producing High Vacuum, 557

Institution of Water Engineers:
Air-lift Pumping, Papers by Mr. C. Anthony and Professor A. H. Jameson, 526
Water Power Supplies of the United Kingdom, C. H. Roberts, 525
Winter Meeting, 525

Society, Aeronautical, of Great Britain:
Training of Aeronautical Engineers, Dr. K. M. Walmsley and Mr. C. E. Luard, 6

Society, Ceramic:
Dinner; Presidential Statement, W. J. Jones; Visit to Dalzell Steel and Ironworks, D. Colville and Son, 292
Fire-clays and Ganisters of South of Scotland, L. W. Hinsman and M. MacGregor, 291
Meeting at Glasgow, 291
Papers on Silica, Hydration of Calcined Dolomite and Fire-bricks, by Miss C. Beveridge and Mr. W. Emney, J. Burton, G. W. Wright, 291
Refractories and Modern Kilns, J. G. Maxwell, 291
Refractory Properties of Silica, H. Le Chatelier and B. Bogitch, 291
Tests for Refractories, Dr. J. W. Mellor, 291

ASSOCIATIONS, INSTITUTIONS & SOCIETIES (*continued*):

Society, Chemical:
Limitations of the Balance, Bertram Blount, 402

Society of Chemical Industry:
Activated Sludge Process of Sewage Purification, E. Ardern, 94
Annual General Meeting, 70, 93
Artificial Silk Industry, T. P. Wilson, 94
Benzene and Toluene for High Explosives, Sources of, T. F. E. Rhead, 71
Calorific Value of Industrial Gaseous Fuel, W. J. Pickering, 93
Chemical Porcelain, Henry Watkins, 71
Economics of Coal, Professor Henry Louis, 524
Future of the Fine Chemical Industry, E. W Mann, 94
Industrial Application of Town's Gas, C. M. Walter, 93
Industrial Fuel from Gasworks, E. W. Smith, 93
Manufacture of Synthetic Nitrates by Electric Power, E. Kilburn Scott, 93
Metallurgical Questions, Professor Turner, 94
Other Papers: Cartridge Brass, Dr. H. W. Brownsdon; Aluminium Alloys, J. H. Stansbie; Carbonless Alloys, J. Kent Smith; Superheating of Slags and Metals during Refining, J. E. Fletcher, 94
Presidential Address, Dr. C. C. Carpenter, 71
Sands Used in Metallurgical Practice Compared with those Used in Glass Manufacture, Professor Boswell, 71
Synthesis of Ammonia and its Oxidation to Nitric Acid, E. B. Maxted, 93
Texture of Fire-clays, W. C. Hancock, 71
Visits, 94
LONDON SECTION—
Patent Law Reform, Dr. F. W. Hay, 435

Society, Faraday:
Pyrometers and Pyrometry, Discussion, 393, 402, 424

Society, Royal, of Arts:
Copper, Progress in the Metallurgy of, Professor H. C. H. Carpenter, 491, 526, 566
Discovery and Invention, Sir Dugald Clerk's Trueman Wood Lecture, 514
Programme for Session, 442
Science and its Functions, A. A. Campbell Swinton, 447

ATMOSPHERIC Engine—*see* Engines
Atmospheric Pollution and the Impurities of Rain-water, J. B. C. Kershaw, 443
Attachment of Spindles to Forged Steel Valves, F. M. McLarty, Jun., 153
Australia, Fuel Alcohol in, 278
Australia, Soldiers after the War, 336
Australian Notes, 518
Austrian Inland Waterways Project, 99
Automatic Control of Pumps—*see* Pumps
Automatic Drop-bottom Mine Car (Griffith Tub), Sanford-Day Ironworks and Manufacturing Company, 457
Automobile Engineering, Welding with Application to, H. L. Towns, 125, 147

B

BALANCE, Assaying and Chemical, Wilfred Heusser, 192
Balance, Limitations of the, Bertram Blount, 402
Baling Press—*see* Cotton
Band Saw—*see* Sawing
Bar Mill—*see* Iron and Steel
Barrett, G., and T. B. Rogerson, on the Briquetting of Iron Ores, 265, 299, 310
Basic Blast-furnaces, 392

Bedson, J. P., on Developments in Wire Manufacture, 334
Benzol, The Future of, 387; (Letters), 428, 450
Bevel Gear Machines—*see* Machine Tools
Blast-furnace Dust—*see* Ministry of Munitions
Blount, Bertram, on the Limitations of the Balance, 402
Boiler Feed-water Regulator, Copes, 367
Boiler Plates, Failure in, and the Stresses in Riveted Joints, Dr. E. B. Wolff, 296, 456
Boilers for Locomotives, Heating Surface of, 45
Boilers, Waste Heat, for Driving Drop Hammer Plant, 450, 452
Books of Reference, 81, 118, 348
Boring Machines—*see* Machine Tools
Bostock, F. J., on Worm Gearing, 393
Boston, U.S.A., Submarine Tunnel at, 230, 234, 235
Boulnois, H. P., Report to Roads Improvement Association, Concrete Roads, 73
Bourcier, P. G., on Aero-engine Connecting-rods, 167
Brakes—*see* Railways
Brass Melting, L. G. Harvey, 275
Brass Scrap, 118
Brasses, Experiments on the Fatigue of, Dr. B. Parker Haigh, 252
Brazil, Public Works in, 449

BRIDGES:
Locks and Bridges for Mid-Scotland Canal, 558 (*Two-page Supplement, December 28th*, 1917)
Practice in Bridge and Girder Yards from a Theoretical Standpoint, George Kenworthy, 5, 25, 48, 91; (Letters), 162, 248
Quebec Bridge, The New, 253, 336, 338, 381, 403, 426 (*Two-page Supplement, November 9th*, 1917)
Suspension Bridges in New Zealand, J. Dawson's System, 52, 56
Typical Swing Bridge for Proposed Mid-Scotland Canal, 560

BRIQUETTING—*see also* Iron and Steel
Briquetting Metal Turnings, Debate, 525
Britain as an Agricultural Country, 188; (Letter), 360
British Agricultural Tractors and Haulers, 512, 533, 553, 562
British Industries, The War, Some Metals and, 99
British Marine Engineering Design, and Construction Committee, 209, 257, 505
British Standard Sections, Approved, 567
Business of War, 187

C

CALIFORNIA, Power Plant Extension in, 193
Californian Magnesite, 103
Canada, Trade between the United Kingdom and, 118
Canadian Railways—*see* Railways
Canal Control Committee, 175
Canal Schemes, Mid-Scotland, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Canals, 453
Canteens, Engineering Works, A. F. Agar, 491
Canteens at Munitions Works, 268, 269
Carburetters—*see* Motor Vehicles
Career Offered by Engineer's Department of a British Railway, 113
Carlisle, Locomotive Coaling Plant at, London and North-Western Railway, 12, 18
Carpenter, Professor H. C. H., on Progress in the Metallurgy of Copper, 491, 526, 566
Carpenter, Dr. H. C. H., and Mr. L. Taverner, on the Effect of Heat on Aluminium, 274
Case Hardening Furnace, Monometer Manufacturing Company, 570
Casting, A Heavy, Transporting, 413
Castings, Some Large, Ruston, Proctor and Co., Limited, 292
Catalogues, 19, 39, 108, 132, 176, 196, 260, 418, 437
Caterpillar—*see* Evolution of Chain Track Tractor
Caustic Soda Concentration Plant, Mirrlees, Watson Company, Limited, 34, 44
Cement Joints for Cast Iron Water Mains, Clark H. Shaw, 32
Centenary of the "Civils"—*see* Associations, &c.
Centenary of the Heat Regenerator and Stirling's Engine of 1816, 516, 517; Stirling Specification, 567
Centrifugal Type Gas Washers, W. C. Holmes and Co., Limited, 502
Ceramic Society, Refractory Materials Section, 291 (For Details of Papers—*see* Associations, &c.)
Chain Track Tractor—*see* Tractor
Channel Tunnel, 193
Charges for Water—*see* Water Supply
Charpy, Georges, and Andre Cornu-Thenard, on Experiments on Shock Tests and on Determination of Resilience, 244, 265
Chemical Papers at Society of Chemical Industry—*see* Associations
Chester Hydro-electric Power Developments, 86
Chili, Engineering Schemes for, 560
China and the Engineer, S. W. B. McGregor, 360
Chorlton, A. E. L., on the Design of a Small Agricultural Tractor, 545
Chuck, The "Marvel" Drill, Louis Wearden and Guylee, Limited, 54
Circular Arcs, Simple Calculations of, 114
Clapham, F. T., on The Distribution of Establishment Charges, 177; (Letters), 301, 323
Clapham, F. T., on Foundry Costs, 286
Clerk, Sir Dugald, Discovery and Invention, 514

COAL, COKE, AND COLLIERIES:
By-product Coking, G. B. Walker, 509
Coal Concreted from Dust or Ashes, R. G. Lovell, 126
Coal Problem, 330
Coal and Tin Mining in British Malaya, 63
Coal Transport Reorganisation Scheme, 36, 54
Coke-handling Plant, Telpher, at Warrington Gasworks, Strachan and Henshaw, Limited, 430, 434
Colliery Winding Engine, Old, 94, 98
Economics of Coal, Professor Henry Louis, 524
Economy in Coal Consumption, Government Suggestions, 7

COAL, COKE, & COLLIERIES (*cont.*):
Electricity Supply and the Economy of Coal, 540
Gas, Coal, for Motor Vehicles, 226
Griffith Colliery Tub (Automatic Drop-Bottom Mine Car), Sanford-Day Manufacturing Company, 457
Locomotive Coaling Plant at Carlisle, London and North-Western Railway, 12, 18
New Scheme for Coal Supply, 36
Osaka Electric Works, Coal and Ash Plant at the, Babcock and Wilcox, Limited, G. F. Zimmer, 115
Position of the Coal Mining Industry, A. F. Pease, 373
Push Button Coal and Ash Hoists at Allison and Baltimore, 254
Sampling Coal, 42

COKE—*see* Coal
Columbia, A New Port in, 425; (Letter), 556
Commerce and the State, 521
Commercial Aspect of Engineering in China, S. W. B. McGregor, 360
Commercial Dock Developments at Falmouth, 378
Concrete, Reinforced, Arched Keel Block, Ayrshire Dockyard Company, Limited, 345
Concrete, Reinforced, Shipbuilding in Norway, 520, 524
Concrete Roads, Report to Roads Improvement Association, H. P. Boulnois, 73
Concrete, Transmission of, by Air and Steam, 159, 164
Concrete—*see* also Ferro-Concrete
Contract, 552
Controlled Owner, The, 251
Conversion of Ford Cars—see Motor Vehicles
Copes Boiler Feed Water Regulator, 367
Copper, Metallurgy of, Professor H. C. H. Carpenter, 491, 526, 566
Correspondence Schools, 488
Corrosion of Iron—*see* Iron
Corrosion of Metal, Electrolytic, by Sea Water, 260
Costs—*see* Working Costs
Cotton Baling Methods and Freightage Economy, 282
Cotton Baling and Sampling Machinery, A. E. Cummins, D. Bridge and Co., Limited, 448
Coventry Strike, 501
Cranes, 5-Ton Electric Goliath, for France, Sir W. Arrol and Co., Limited, 140, 142
Critical Speeds of Loaded Shafts, W. M. Wallace, 246
Culm and other Waste Fuels, Use of, J. B. C. Kershaw, 307
Curtis Rateau Turbines—*see* Turbines

D

DANGER of Letting Things Slide, 252
Darling, Chas. R., on Small Electric Furnaces and their Uses, 422
Desbleds, L. Blin, on the Output of Aeroplanes, 508
Design of a Tractor—*see* Tractor
Deterioration of Curtis Rateau Turbine Blading, A. Fenwick, 30, 60
Development of German Waterways, 196
Development of Machinery in the United States Navy—*see* Ships
Discharging Ore, New Method for, 193
Discovery and Invention, Trueman Wood Lecture, Sir Dugald Clerk, 514
Distribution of Engineers' Products Overseas, C. Hamilton-Wickes, 314
Distribution of Establishment Charges, F. T. Clapham, 177; (Letters), 301, 323
Diving Globe for Salving Sunken Ships, W. D. Sisson, 386, 389
Docks and Harbours, Empire, 499
Docks, Rosario, Improvements at the, 292
Donaldson Elevator for Ore Discharging, 193
Doorakkers, G., on the Manufacture of Hardened Thread Gauges, 263, 290, 308, 354, 355, 390
Drill Chuck, The "Marvel," Louis Wearden and Guylee, Limited, 54
Drilling Machines—*see* Machine Tools
Drop Hammer Plant, Bretts' Patent Lifter Company, 450, 452
Duties of the Air Forces, 35
Dyson, Captain C. W., on The Development of Machinery in the United States Navy, 170, 190, 211

E

ECONOMY in Coal Consumption, Government Control, 7
Education of Apprentices, 76
Educational Intelligence, 196, 248, 284, 305, 328, 333, 572
Efficiency, A. L. Haas, 37
Efficiency, Meaning of—*see* Working Costs of Prime Movers

ELECTRICAL MATTERS:
Bar Mill, 20in., Motor-driven, General Electrical Company, 190
California, Power Plant Extension in, 193
Chester Hydro-Electric Power Developments, 86
Coal and Ash Plant at the Osaka Electric Works, Babcock and Wilcox, Limited, G. F. Zimmer, 115
Electric Discharge and Crop Production, Experiments by Miss E. C. Dudgeon, Mr. J. E. Newman, and others, 74
Electric Drive for Warships, 228
Electricity Supply and the Economy of Coal, 540
Empress Works, Huddersfield, E. Brook, 342
Greenock, Ferro-Concrete Power House at, 239
Greenwich, L.C.C. Power Station, New Appointments at, 560
Halifax District, New Sub-Stations for, 76
Lancashire and Cheshire, Interconnection of Electricity Supply Systems in, 171
Locomotives and Railways—*see* Railways
Motor Boats, Electrically Controlled, 425
National Electric Supply Policy, 453
Pumps, Electrically Driven—*see* Pumps

ELECTRICAL MATTERS (*continued*):
Small Electric Furnaces and their Uses, Chas. R. Darling, 422
Standardisation of Machinery, British and American Conference, 319
Switch, Wall Socket and Plug, Combined, Donovan and Co., 83
Tasmanian Great Lake Hydro-Electric Power Scheme, 67, 78 (*Two page Supplement, July 27th*, 1917)
West Highlands, Big Water Power Scheme for Aluminium Manufacture, 463, 525
Wild-Barfield Method of Steel Hardening, 82
Winch, Electric, J. H. Wilson and Co., Limited, 525

ELECTROLYTIC Corrosion of Metal in Sea Water, 260
Elswick—*see* Works
Emmett, W. L. R., on the Turbine Electric Equipment of United States Cruisers, 228
Empire Docks and Harbours, 499
Empire, The: Its Commerce and its Commercial Requirements, S. J. Johnstone, 457
Employers and Employed, 10, 13

ENGINES AND MOTORS:
Aero Engine Connecting-rods, P. G. Bourcier, 167
American Aviation Engine, 311
Atmospheric Colliery Winding Engine at Madeley, 94, 98
Bulb Experiments on Hot Bulb Engines, 112; (Letters), 149, 161, 215
Heat Engines, Capt. H. Riall Sankey, 489
Standardisation of Marine Engines, 209, 257, 505
Stirling's Regenerator and Hot Air Engine of 1816, 516, 517
Stirling's Specification, 567; (Letter), 537
Testing Department of Fiat Company, Turin, 504
Uniflow Engine, H. W. Morley, 455
Uniflow Engine for Road Vehicles, F. W. Marquis, 276; (Letters), 333, 360, 384
United States Naval Machinery—*see* Ships
Working Costs of the Principal Prime Movers, Oswald Wans, 355, 363, 368, 380, 414; (Letter), 384

ENGINEER, Volunteers, County of London 24, 45, 68, 87, 110, 132, 152, 176, 196, 218, 239, 248, 305, 328, 350, 374, 397, 419, 442, 464, 486, 510, 527, 552, 570
Engineers, Training of, 379
Engineering Design—*see* British Marine, &c.
Engineering Enterprise in Mexico, 167
Engineering, Links in the History of, Rhys Jenkins, 493
Engineering Projects in Latin-America, 115—*see* also Latin-American Notes
Bolivian Railways, 115
Peru, A New Port in, 115
Engineering Schemes for Chili, 560
Engineering Training, 364
Engineering Works Canteens, Arthur F. Agar, 491
Establishment Charges, Distribution of, F. T. Clapham, 177
Evolution of the Chain Track Tractor, 111, 134, 135, 156, 181, 202, 208, 221, 241, 250; (Letter), 184
Excess Profits Problems, 53
Explosibility of Methane Air Mixtures, 215

F

FAILURE of Boiler Plates—*see* Boiler
Falmouth, Commercial Dock Developments at, 378
Feed Water Regulator, Copes, 367
Fenwick, A., Deterioration of Curtis Rateau Turbine Blading, 30, 60
Ferro-Concrete Power House at Greenock, 239
Fiat Company, Turin, Testing Department, 504
Filter Bed Sand Washer, Portable, Hunter and English, Limited, 44
Fire and Salvage Boat for Elswick, 503
Firebrick Manufacture, Testing, &c., Paper Read at Glasgow Meeting of the Ceramic Society, 291
Floods, The Protection of Paris Against, 16
Ford Cars—*see* Motor Vehicles
Foreign Languages, Reconstruction and, 493
Forth and Clyde—*see* Canal
Forthcoming Engagements, 24, 110, 218, 238, 260, 284, 304, 326, 350, 360, 396, 415, 437, 462, 484, 508, 530, 550, 570
Foundry Costs, F. T. Clapham, 286; (Letters), 301, 323
French Industries, New, 248
Friction Screw Press, J. Rhodes and Sons, Limited, 43
Friend, Dr. Newton, on Conditions Essential to the Corrosion of Iron, 550
Fuel Alcohol, 232
Fuel Alcohol in Australia, 278
Fuel Economy Possibilities in Brass Melting Furnaces, L. G. Harvey, 275
Fuel Research, 340, 344
Fuels, Culm and Other Waste, Use of, J. B. C. Kershaw, 307
Furnace, Oil-fired Case Hardening, Monometer Manufacturing Company, 570
Furnaces, Brass Melting, Fuel Economy Possibilities in, L. G. Harvey, 275
Furnaces for the Heat Treatment of Metals, J. Wright and Co., 146, 147
Furnaces—*see* also Electrical Matters
Fuses—*see* War Material
Future of Benzol, 387; (Letters), 428, 450
Future of Railways—*see* Railways

G

GAS, Coal, for Motor Vehicles, 226
Gas-driven Motor Vehicles, 178
Gas Firing, New System of, A. C. Ionides, 275, 320
Gas, Industrial Uses, Abstracts of Papers at Society of Chemical Industry, 93
Gas Washers, Centrifugal Type, W. C. Holmes and Co., Limited, 502
Gases and Air, Inflammability of Mixtures of, G. A. Burrell and A. W. Gauger, 168
Gauges, Hardened Thread, Manufacture of, G. Doorakkers, 263, 290, 308, 354, 355, 390
German Munitions Supply, 339
German Waterways, The Development of, 196
Germany's Economic Position After the War, 544
Germany, Substitutes in, 509
Glasgow Corporation Tramways, 122
Greenock, Ferro-Concrete Power House at, 239
Greenwich, L.C.C. Power Station, New Appointments at, 560
Grey Cast Iron—*see* Iron
Griffith, A. A., and G. I. Taylor on the Use of Soap Films in Solving Torsion Problems, 536, 543, 546
Griffith Tub—*see* Coal
Grinding Machines—*see* Machine Tools
Guedon, Pierre, on Aero Steam Railway Traction, 425
Gunboats and Baghdad, 274
Gun Lathes—*see* Machine Tools

H

HAAS, A. L., on Efficiency, 37
Haddrell, C. H., on The Industrial Outlook, 137, 144: (Letter), 301
Haigh, Dr. B. P., on Experiments on the Fatigue of Brass, 252
Haig's Weather, 295
Hamilton-Wickes, C., on The Distribution of Engineers' Products Overseas, 314
Harbour Scheme, Langstone, near Portsmouth, 179
Hardness and Hardening, Professor T. Turner, 252, 254, 295
Harvey, L. G., on Fuel Economy Possibilities in Brass Melting Furnaces, 275
Haughton, J. L., and D. Hanson, Further Notes on a High Temperature Thermostat, 275, 322
Hawksley, Thomas, Lecture on Heat Engines, Capt. H. Riall Sankey, 489
Hay, Dr. F. W., on Patent Law Reform, 435; (Letter), 481
Heat, Effect of, on Aluminium, Dr. H. C. H. Carpenter and Mr. L. Taverner, 274
Heat of Steam, The Latent, F. B. Aspinall, 3, 25, 47, 58; (Letters), 162, 184, 279
Heat Treatment of Iron and Steel—*see* Iron
Heat Treatment of Metals, Furnaces for, J. Wright and Co., 146, 147
Heating of Industrial Buildings, J. Boyd and Sons, 503
High Temperature Thermostat—*see* Thermostat
High Vacuum, Methods of Producing, Experimental Apparatus at Richardsons, Westgarth and Co., Report, 557
History of Engineering, Links in, Rhys Jenkins, 493
Hobbs, E. W., Mechanical Arms for Maimed Soldiers, 334, 335, 351, 376
Hoists, Push Button Coal and Ash, 254
Hot Air Engines—*see* Engines
Hot Bulb Engines, Some Bulb Experiments on, 112: (Letters), 149, 161, 215
Hughes, V. A. B., on Reform of the Patent Laws, 425
Hurst, J. E., on Heat Treatment of Grey Cast Iron, 266
Hydro-Electric Power Developments, Chester, 86
Hydro-Electric Power Scheme, Tasmanian Great Lake, 67, 78 (*Two-page Supplement, July 27th*, 1917)
Hydrostatic Pressure, Effect of, on Metals, Professor Zay Jeffries, 275

I

IMPACT Testing Experiments, G. Charpy and A. Cornu-Thenard, 244, 265
Industrial League, 81, 196
Industrial Outlook, C. H. Haddrell, 137, 144 (Letter), 301
Industrial Parliament, 35
Industrial—*see also* Labour Questions
Industrial Research—*see* Research
Industrial Unrest—*see* Labour
Industries, New French, 248
Industries of Poland, 14
Industry and the Whitley Report, 169
Inflammability of Mixtures of Gases and Air, G. A. Burrell and A. W. Gauger, 168
Inland Waterways, Use of, 526
Institutes and Institutions—*see* Associations
Intensifier, Inverted Steam Hydraulic, Davy Brothers, Limited, 366
Ionides, A. C., on a New System of Gas Firing, 275, 320

IRON AND STEEL:
Acid Open-Hearth Process, Dr. F. Rogers, 276, 297
Action of Caustic Liquors on Steel Plates, C. E. Stromeyer, 496
American Iron Trade, 228
Bar Mill, 20in., Electrically Driven, General Electric Company, 191
Basic Blast Furnaces, 392
Briquetting of Iron Ores, Guy Barrett and T. B. Rogerson, 265, 299, 310
British Steel for Shells, 509
Corrosion of Iron, Conditions Essential to the, Dr. Newton Friend, 550
Dealings in Pig Iron, 63
Electric Method of Steel Hardening, Wild-Barfield, 82
Forged Steel Valves, Attachment of Spindles to, F. M. McLarty, Jun., 153
Heat Treatment of Grey Cast Iron, J. E. Hurst, 266
Heat Treatment, Influence of, on Electrical Resistivity, &c., E. D. Campbell and W. C. Dowd, 297
Iron Mines of Cumberland and Lancaster, 87
Iron Ore, Professor Henry Louis, 493
Iron Prices, 86
Iron and Steel Institute—*see* Associations
Labour and Wages, 305—*see* also Labour
Prices of Steel—*see* Ministry of Munitions
The War, Some Metals and British Industry, 99

IRRIGATION Projects in South Africa, 169
Irrigation for Vegetable Growing, 108

J

JAPAN and the War, 248
Jeffries, Professor Zay, on the Effect of Hydrostatic Pressure on Metals, 275
Jenkins, Rhys, on Links in the History of Engineering, 493
Johnstone, S. J., on The Empire: Its Commerce and its Commercial Requirements, 457

K

KENWORTHY, George, on Practice in Bridge and Girder Yards, &c., 5, 25, 48, 91; (Letters), 162, 248
Kershaw, J. B. C., on Atmospheric Pollution and the Impurities of Rain-water, 443
Kershaw, J. B. C., The Use of Culm and Other Waste Fuels, 307
Kershaw, J. B. C., The Use of Waste Gases for Steam Generation, 27

L

LABOUR NEWS, STRIKES, AND WAGES QUESTIONS:
Admiralty Appeal to Workers, 51
Advances in Wages, 63
Employers and Employed, 13
Industrial Councils, 10, 13
Industrial League, 81
Industrial Parliament, 35
Industrial Unrest, 79
Industrial Unrest, Causes of, 121
Industrial Unrest, Inquiry, 122
Industry and the Whitley Report, 169
Labour and the State, 187
Miners' Wages, 192
Pay of Foremen and Shop Managers, 425
Railway Enginemen's Demands, 165
Railway Men's Societies, 215
Scientific Institutes and Industrial Requirements, 274; (Letter), 323
Welsh Labour, Commissioners' First Report, 100
Whitley Report, 169, 331, 357

LANGSTONE Harbour Scheme, 179
Latent Heat of Steam, F. B. Aspinall, 3, 25, 47, 58; (Letters), 162, 184, 279
Lathes—*see* Machine Tools
Latin-American Engineering Notes, 115, 225, 397
Argentina, 225
Bolivian Railways, 115
Chili, 225, 397
El Salvador, 225
Peru, A New Port in, 115

LEADERS:
Acid and Basic Steel, 364
Air Reprisals, 340
America's Shipbuilding Problems, 165
Apotheosis of the Destroyer, 499
Austrian Inland Waterways Project, 99
Britain as an Agricultural Country, 188
Business of War, 187
Canals, 453
Causes of Industrial Unrest, 121
Centenary of the "Civils," 563
Coal Transport Reorganisation Scheme, 36
Commerce and the State, 521
Controlled Owner, 251
Cycle in Naval Architecture, 431
Danger of Letting Things Slide, 252
Duties of the Air Forces, 35
Electrification of Main Line Railways, 563
Empire Docks and Harbours, 499
Employers and Employed, 13
Engineering Training, 364
First Lord's Statement, 409
Fuel Alcohol, 232
Fuel Research, 340
Future of Benzol, 387
Future of British Railways, 475
Future of Canadian Railways, 79
German Munitions Supply, 339
Glasgow Corporation Tramways, 122
Gunboats and Baghdad, 274
Haig's Weather, 295
Industrial Parliament, An, 35
Industrial Research, 209
Industrial Unrest, 79
Labour and the State, 187
Latent Heat of Steam, 58
London County Council Tramways, 58
Manufacturers and Standards, 317
Meaning of Efficiency, 363
Measurement of Temperature, 431
M.I.D., The, 543
Ministry of Munitions, 13
National Electric Supply Policy, 453
Organisation and Efficiency, 144
Our Naval Strategy, 143
Patent Law Reform, 521
Quality of Hardness, 295
Railway Enginemen's Demands, 165
Science and the Man, 476
Scientific Institutes and Industrial Requirements, 274
Shipping and Shipbuilding in the United States, 317
Ships and More Ships, 410
Size of the Standard Ships, 273
Standardisation of Marine Engines, 209
Submarine War: The Latest Phase, 231
Taxation of Stock Values, 57
The War, Some Metals, and British Industries, 99
Torsion, 543
Transmission of Military Power, 387
Vanguard Disaster, 57

LETTERS FROM OUR OWN CORRESPONDENTS:
England, North of, 21, 40, 64, 85, 107, 128, 150, 172, 195, 217, 237, 259, 280, 302, 324, 346, 370, 394, 416, 438, 460, 482, 507, 528, 548, 568
Lancashire, 20, 39, 64, 84, 106, 128, 150, 172, 194, 216, 236, 258, 280, 302, 324, 346, 370, 393, 415, 438, 459, 481, 505, 527, 548, 568

LETTERS FROM OUR OWN CORRESPONDENTS *(continued)*:
Midlands and Staffordshire, 19, 39, 63, 84, 106, 127, 149, 171, 193, 216, 236, 257, 279, 301, 323, 345, 369, 393, 415, 437, 459, 481, 505, 527, 548, 567
Scotland, 22, 41, 65, 86, 108, 129, 152, 173, 195, 218, 238, 259, 282, 304, 325, 347, 371, 395, 417, 440, 461, 483, 507, 529, 549, 569
Sheffield, 20, 42, 65, 84, 107, 129, 151, 173, 194, 216, 237, 258, 281, 303, 325, 347, 371, 395, 417, 439, 461, 483, 506, 529, 549, 568
Wales and Adjoining Counties, 22, 41, 66, 86, 108, 130, 152, 174, 196, 218, 238, 260, 282, 304, 326, 348, 372, 396, 418, 440, 462, 484, 507, 530, 550, 569

LETTERS TO THE EDITOR:
Aeroplane Manufacture, L. Blin Desbleds, 360
Air-lift Pumps, R. Stirling, 556
American Industries, B. K., 301
Britain as an Agricultural Country, F. L. Morgan, 360
Centenary of the Heat Regenerator and the Stirling Air Engine, R. B. Prosser, 537
Charing Cross Railway Bridge, H. Davey, 105
Coal Economy—*see* Fuel
Colombia, A New Port in, F. L. Hothersall, 556
Commercial Aeronautics, Handley Page, Limited, 39
Conquest of Schleswig-Holstein, T. F. Wilkinson, 19
Control of Railways, Hexagon, 450
Copper Tubes for Aeroplanes, Ing. Carlo Maurilio Lerici, 19
Cornish Engine and Steam Engine Economy, Henry Davey, 537
Duddell, William Du Bois, 428
Early Steamboat, Arthur Lee, 118, 248, 323; J. H. Anderson, 118; Fred. Walsh, 228; R. B. P., 279
Engineers and India, Executive Engineer, 527
Ericsson's Monitor, Writer of the Article, 161
Essential Metals, Geo. T. Pardoe, 537
Evolution of the Chain Track Tractor, L. Sterne, 184
Evolution of the Monitor, R. B. P., 184
Excess Profits, Cleveland Manchester Engineer, 54
Feed-water Heating in Locomotives, W. G. Landon, 450; Mead, McLean and Co., 527
Filing Papers, A. Fanti, 87
Foundry Costs, Practical Cost Accountant, 301; F. T. Clapham, 323
Fuel Alcohol, Horace Wyatt, 248
Fuel Economy, F. Samuelson, 38; W. H. Casmey, 38, 105, 149, 215; Lancastrian, 87; W. Townsend, 118; Steam-Raiser, 118, 184
Future of Benzol, T. D. Parr, 428, 450; Interested Engineer, 149
German Trade after the War, H. Hamel Smith, 428
Gloucester as a Port: Why not Modernise It? E. F., 526
Hot Bulb Engines, Basil H. Joy, 149; A. J. W. G., 149; R. E. Mathot, 161; Cecil H. Cox, 215
Latent Heat of Steam, Henry Sykes, 162; Steam, 184; F. B. Aspinall, 279
Locomotive Feed Purifiers, W. Effigy, 323
Metric System, F. A. Halsey, 105
Motor Boating and Motoring in Japan, W. H. Leggett, 384
Names for Compound Units—*see* Pinch
Noise in Reinforced Concrete Buildings, S., 54
Oil Engine Nomenclature, H. A. Stuart, 384
Organ Blowing, C. M. Penman, 248
Patent Law Reform, Wilfred Hunt, 481; James Keith, 537; E. C. Barton, 556
"Penalty" of Failure in the British Army, J. C., 54
"Pinch," C. F. Dendy Marshall, 162, 384; Associate Member, 333; H. W. Stowers, 384; H. Ravenshaw, 413; R. C. Kirkwood, 413
Plymouth as a Commercial Port, R. E. Ellacott, 248
Pounds Per Square Inch—*see* Pinch
Practice in Bridge and Girder Yards, &c., H. R. White, 162; G. Kenworthy, 248
Production of Ductile Tungsten, British Thomson-Houston Company, 556
Pyrmont Bridge, Percy Allan, 162; H. R. White, 184
Railway Transport, A. W. Gattie, 54
Remuneration of the Staff, Skill, 384; Bitten, 428
Royal Navy and its Engineers, Ex-Editor, *The Naval Engineering Review*, 105
Scientific Institutes and Industrial Requirements, Traditionist, 323
Secret Session for Engineers, H. C. C., 19
Solid Fuel for Steam Cars, C. D. Leng, 248
Steel Rail Trade, T. Good, 279
Tube Rolling Mill Patent, Clydeside Tube Company, 384
Types of Irish Locomotives, E. L. Ahrons, 184
Uniflow Compound Engine, M.I.C.E. (Fr.), 333; Robey and Co., 360; A. J. W. G., 384; Geo. T. Pardoe, 384
Valve for Sewage Pumps, E. C. Bowden-Smith, 428
Wagon Smash, Salt Union, Limited, 54
Wheels of Tractors, H. P. Saunderson, 39
Working Costs of Prime Movers, H. Davey, 384

LIMITATIONS of the Balance, Bertram Blount, 402
Links in the History of Engineering, Rhys Jenkins, 493

LITERATURE:
Reviews:
All the World's Aircraft, 1917, F. T. Jane, Edited, C. G. Grey, 166, 234
Composition of Technical Papers, H. A. Watt, 341
English and Engineering, Frank Aydelotte, 15
Explosives, Arthur Marshall, 15
On Growth and Form, D'Arcy Wentworth Thompson, 365
Practical Marine Engineering for Marine Engineers, &c., Captain C. W. Dyson, 267
Rowan Premium Bonus System, 80
Searchlight Projectors, Electric, The Range of, Jean Rey, 59

LITERATURE *(continued)*:
Short Notices:
Industrial and Manufacturing Chemistry, Part II.: Inorganic, Geoffrey Martin, 32, 101
London Transport Trust, Edwin A. Pratt, 15; (Letter), 54
Mechanical Handling of Material, &c., G. F. Zimmer, 32, 101
Naval Architecture, J. E. Steele, 80, 101
Properties of Aerofoils and Aerodynamic Bodies, A. W. Judge, 101
Saws: Their Care and Treatment, H. W. Durham, 101
Steel and its Heat Treatment, D. K. Bullens, 101
Telegraph Engineering, Erich Hausmann, 15

Books Received:
Applied Chemistry, Reports of the Progress of, 15
Artilleristisch Tijdschrift, J. H. Carstens and J. H. Westerveld, 234
Brazil Commercially Considered, *Syren and Shipping*, 234
Business Law for Engineers, C. Frank Allen, 501
CANADA: DEPARTMENT OF MINES—MINES BRANCH:
Annual Report on Mineral Production of Canada, No. 426; Report on Building and Ornamental Stones of Canada, Dr. Wm. A. Parks, No. 388
Bulletin No. 14, Coal Fields and Coal Industry of Eastern Canada, F. W. Gray, No. 430, 32
Mining of Thin Coal Seams as Applied to the Eastern Coalfields of Canada, J. F. Kellock Brown, 501
City and Guilds of London Institute, Department of Technology, Programme 1917, 18, 101
C.M.U.A. Handbook, F. G. Bristow, 257
Concrete—Plain and Reinforced, Dr. F. W. Taylor and S. E. Thompson, 101
Continuous Current Motors and Control Apparatus, A. P. Maycock, 501
Contribución al Estudio de las Ciencias Fisicas y Matemáticas, &c., XVIII., XIX., XX., 501
Correction Tables for Thermodynamic Efficiency, C. H. Naylor, 101
Cours de Géometrie Pure et Appliquée de l'école Polytechnique, M. d'Ocagne, 101
Critique des Propulseurs, Paul Popovatz, 140
Cycling Manual, 15, 501
Design and Construction of Industrial Buildings, Maurice Kahn, 257, 267
Design of Railway Location, C. C. Williams, 101
Diesel Engine Design, E. M. Rose, 267
Electrical Engineering, Principles and Practice of, Alexander Gray, 297
Electrical Measurements, F. A. Laws, 297
Elements of Coal Mining, D. Burns, 234
Explosives, A Short Account of, A. Marshall, 267, 341
Farming by Motor, 80
Flying Book, W. L. Wade, 15
Founder's Manual, D. W. Payne, 297
GEOLOGICAL SURVEY, MEMOIRS OF THE:
"Geology of the South Wales Coalfield," Part IV.; "Country Around Pontypridd and Maesteg," Dr. Aubrey Strahan and Others, 501
Gold Deposits of the Rand, C. B. Horwood, 257
Graphic Statics, The Elements of, E. H. Sprague, 32
Hawkins' Electrical Guide, 257
Heat Drop Tables—Absolute Pressures, H. Moss and Professor H. L. Callendar, 101
Heat Drop Tables—H.P. Gauge Pressures, &c., Herbert Moss and Professor H. L. Callendar, 501
How to Make Railways Pay for the War, Roy Horniman, 32
Hydraulics, Treatise on, Mansfield Merriman, 59
Indicator Handbook, Part II., 80
Institution of Mechanical Engineers, January-May, 1917, 234
Interpreters, The, George Ince, 234
Journal of the Institute of Metals, 123
Journal of the Royal Agricultural Society of England, 123
Kelly's Directory of the Engineers and Iron, Metal and Electrical Trades, 80
Laws of Physical Science, E. F. Northrup, 234
Les Etablissements d'Artillerie Belges Pendant la Guerre, Willy Breton, 234
Logarithms for Beginners, C. N. Pickworth, 80
Materials of Engineering, Text-book of the, H. F. Moore, 501
Metallurgical Analysis, Methods in, C. H. White, 501
Modern Underpinning, Lazarus White and Edmund E. Prentis, Jun., 501
Motor, Marine and Aircraft Red Book, 1917, W. C. Bersey and A. Dorey, 267
Munition Workers' Handbook, Ernest Pull, 234
Oils, Fats, and Waxes, P. J. Fryer and F. E. Weston, 234
Operation and Maintenance of Irrigation Systems, S. T. Harding, 257
Organisation of Thought, A. N. Whitehead, 15
Power Wiring Diagrams, A. T. Dover, 501
Preservation of Wood, A. J. Wallis-Tayler, 267, 341
Proceedings, Engineering Association of N.S.W., 297
Proceedings of the Incorporated Municipal Electrical Association, 1917, 267
Programme of the City and Guilds Technical College, Finsbury, 80
Prospectus of University Courses in the Municipal School of Technology, Manchester, 80
Quantitative Analysis, Principles of, W. C. Beasdale, 501
Records of Railway Interest in the War, Part IV., 59
Refrigeration, The Elements of, A. M. Greene, Jun., 501
Registration and Publication of Directors' Names, H. W. Jordan, 257
Royal Ontario Nickel Commission, 234
Science and Industry, R. T. Glazebrook, 59

LITERATURE *(continued)*:
Books Received *(continued)*:
Scientific Treatise on Smoke Abatement, H. Hamilton, 101
Smoley's Parallel Tables of Slopes and Rises, C. K. Smoley, 297
Steam Turbines, J. A. Moyer, 59
Street Railways' Fares, D. C. Jackson and D. J. McGarth, 297
Theory of the Submarine Telegraph and Telephone Cable, H. W. Malcolm, 234
Trade of To-morrow, E. J. P. Benn, 101
United States Artillery Ammunition, Ethan Viall, 234
UNITED STATES DEPARTMENT OF THE INTERIOR: BUREAU OF MINES:
Annual Report of Director of Bureau of Mines to Secretary of the Interior to June 30th, 1916, 15
Bulletins:
147, Abstracts of Current Decisions on Mines and Mining, J. W. Thompson, 140
95, Magnetic and Other Properties of Iron-Aluminium Alloys Melted in Vacuo, Trygve D. Yensen and W. A. Gatward, 101
128, Refining and Utilisation of Georgia Kaolins, Ira E. Sprout, 80
124, Sandstone Quarrying in the United States, O. Bowles, 140
Miners' Circular:
23, Elementary First Aid for the Miner, W. A. Lignott and D. Harrington, 15
Monthly Statements of Coal Mine Fatalities in the United States, by Albert H. Fay, September and October, 1916, 15
Coal Mine Fatalities in the United States, 1916, A. H. Fay, 80
January, February and March, 1917, 140
Technical Papers:
164, Accidents at Metallurgical Works in the United States, 1915, A. H. Fay, 15
106, Asphyxiation from Blast-furnace Gas, F. H. Willcox, 140
137, Combustion in the Fuel Bed of Hand-fired Furnaces, H. Kreisenger and Others, 80
150, Inflammability of Mixtures of Mine Gas and Industrial Gases with Air, G. Burrell and A. W. Gauger, 140
153, Injurious Dusts in Steel Works, J. A. Watkins, 140
168, Metal Mine Accidents in the United States in 1915, A. H. Fay, 80
166, Motor Gasoline, Properties, Testing, &c., E. W. Dean, 140
143, Ores of Copper, Lead, Gold and Silver, C. H. Fulton, 140
140, Primary Volatile Products of the Carbonisation of Coal, Guy B. Taylor and H. C. Porter, 140
132, Underground Latrines for Mines, J. H. White, 15
142, Vapour Pressures of Various Compounds at Low Temperatures, G. A. Burrell and I. W. Robertson, 15
Universal Directory of Railway Officials 1917, S. R. Blundstone, 234
Watt and the Steam Age, J. W. Grant, 234
What Germany is Fighting for, Sir C. Waldstein, 32
Wonder Book of the Navy, H. Golding, 234
Year Book of the Carnegie Endowment for International Peace, 1917, 257

LOCOMOTIVES—*see* Railway Locomotives
London County Council Tramways, 58
Longitudinal Sleepers for Railways and Tramways, Signor Olindo Valeri, 29
Losses of Ships—*see* Ships
Louis, Professor Henry, on Economics of Coal, 524
Louis, Professor Henry, on Iron Ore, 493
Lovell, R. G., on Coal Concreted from Dusts or Ashes, 126
Low Temperature Carbonisation from the Gasworks Standpoint, 423

M

McGREGOR, S. W. B., on the Commercial Aspect of Engineering in China, 360

MACHINE TOOLS:
(*See also* Works)
Bevel Gear Generating Machine, Smith and Coventry, 82
Boring, Milling and Drilling Machine, Geo. Richards and Co., Limited, 118, 120
Gun Lathe, 15in. Motor-driven, John Hetherington and Sons, Limited, 213, 214
Internal Cylinder Grinding Machine, Churchill Machine Tool Company, 320
Plain Horizontal Milling Machines, 42in., Smith and Coventry, 102
Press, 250-Ton Friction Screw, J. Rhodes and Sons, Limited, 43
Screw-cutting Device, J. D. Carver, 18
Surfacing, Boring, Milling and Drilling Machine, Combined, Pearn-Richards, 118, 120
Taper-turning Sliding Lathe, 9in., H. F. Atkins, 43
Tool Works at Timperley, Smith and Coventry, 470, 474

MACHINERY, Naval—*see* Ships, *also* Engines
Machinery Trade after the War, 248
McLarty, F. M., on Attachment of Spindles to Forged Steel Valves, 153
Magnesite, Californian, 103
Manchester Steam Users' Association, Annual Report, C. E. Stromeyer, 496
Manufacture of Hardened Thread Gauges, G. Doorakkers, 263, 290, 308, 354, 355, 390
Manufacturers and Standards, 317
Marine Engines—*see* Engines
Marquis, F. W., on the Uniflow Engine for Road Vehicles, 276; (Letters), 333, 360, 384
Measurement of Temperature, 432
Mechanical Arms for Maimed Soldiers, E. W. Hobbs, 334, 335, 351, 376
Mechanics' Institution, Great Western Railway, at Swindon, 321
Mechanism for Signals—*see* Railways

Metal, Electrolytic Corrosion of, by Sea Water, 260
Metal Turnings and Borings, Briquetting, Debate at Manchester Association, 525
Metals, Effect of Hydrostatic Pressure on, Professor Zay Jeffries, 275
Metals, Furnaces for the Heat Treatment of, J. Wright and Co., 146, 147
Metals, Institute of—*see* Associations, &c.
Metallurgy of Copper—*see* Copper
Methane-Air Mixtures, Explosibility of, 215
Mexico, Engineering Enterprise in, 167
Mid-Scotland Ship Canal Schemes, 465, 538, 558 (*Two-page Supplement, December 28th*, 1917)
Military Power—*see* War and War Matters
Mill, 20in. Bar, Electrically-driven, General Electric Company, 191
Milling Machines—*see* Machine Tools
Mine Car—*see* Automatic
Mineral Oil Resources of the British Empire, Professor J. S. S. Brame, 412
Miners—*see* Labour
Mines, German Naval, 227
Mining, Coal and Tin, in British Malaya, 63
Ministry of Munitions, 13
Ministry of Munitions: Agricultural Machinery Department, 45
Ministry of Munitions: Munitions Council, 171
Ministry of Munitions: Munitions Inventions Department, 535, 543
Ministry of Munitions Orders, 123, 192, 197, 219, 279, 547
Blast-furnaces Dust, 123
Calcium Carbide, 279
Chrome Ore, 219
Coal Tar, 219
Crude Benzol, Crude Naphtha and Light Oils, 219
Lead, 219
Prices of Steel and Wrought Iron Scrap, 197
Road Stone Quarries, 123
Shell Discard and Electrically-made Steel, 547
Tap Cinder, Mill Cinder, Flue Cinder and Scale, 547
Tin-plates and Terneplates, 192
Women Engineers, 279

MONITOR—*see* Ships
Morley, H. W., on the Uniflow Engine, 455

MOTOR VEHICLES AND MOTOR MATTERS:
Air Heater for Motor Car Carburetters, Brown Brothers, Limited, 480
Coal Gas for Motor Vehicles, 226
Conversion of Ford Cars into Commercial Vehicles, 8
Gas-driven Motor Vehicles, 178
Technical Committee of the Motor Industries, 66

MUNITIONS Works, Canteens at, 268, 269

N

NAVAL Matters—*see* Ships
Naval Notes, 367, 413, 458, 504, 545
Austro-Hungarian Navy, 545
Destroyer Raid on Trieste, 545
Destroyer *versus* Submarine, 504
Drake, H.M., Armoured Cruiser, Torpedoed, 367
Electrically-controlled Boats, 458
German and Austrian Navies, Revolutionary Movements, 367
German Auxiliary Cruiser Marie Sunk, 413
German Electrically Controlled Boat, 413
German Naval Gunnery, 504
German Raider Seeadler, End of, 367
Germany's New Ships with Old Names, 367
Historic Order, 505
Mine Layers, 459
Mr. Daniels' Annual Report, 545
Naval Action in the Gulf of Riga, 367
Navy for Indo-China, 504
Old Vessels on Active Service, 458
Orama, H.M.S., Torpedoed, 413
Swedish Battleships, 459
Swedish New Battleship Sverige, 413
U.S.S. Jacob Jones, 545

N.S.W. REPATRIATION Scheme, 336
New Zealand Suspension Bridge—*see* Bridges
Nickel Deposits and Industry of Ontario, 210, 232
Nitrogen, Atmospheric, Abstracts of Papers at Society of Chemical Industry, 93
Nitrogen Compounds, Synthetic, 155
Nitrogen Problem, 472

O

OBITUARY:
Arkwright, Bernard, 319
Baines, William Newbold, 437
Buchanan, James, 477
Butler, James Ryder, 190
Denny, Peter, 455
Duddell, William Du Bois, 411; (Letter), 428
Griggs, William J., 7
Hawksley, Charles (Portrait), 492
Holland, General, 7
Latham, Charles, 297
Matheson, Ewing, 523; (Correction), 550
Merryweather, James Compton, 477
Ritchie, Henry, 201
Sidney, Lieutenant L. P., 455
Simon, Captain Harry, 225
Sykes, William Robert (Portrait), 319
Westmacott, Percy, 225

OIL-FIRED Case Hardening Furnace, Monometer Manufacturing Company, 570
Omnibus, Gas-driven, for Edinburgh, 226
Ontario, Nickel Deposits and Industry of, 210, 232
Ore, New Method for Discharging, 193
Ore Shipping Pier on Lake Superior, 257
Organisation and Efficiency, 144
Oxide of Zinc, G. C. Stone, 418
Oxy-acetylene—*see* Welding

P

PARIS, The Protection of, Against Floods, 16
Patent Law Reform, 521; (Letters), 537, 556
Patent Law Reform, Dr. F. W. Hay, 435; (Letter), 481
Patent Laws, Reform of the, V. A. B. Hughes, 425
Patent Rights, Acquisition of, 24, 46, 68, 88, 110, 132, 154, 176, 198, 220, 240, 262, 284, 306, 328, 350, 374, 398, 420, 442, 464, 486, 510, 532, 552, 572; (Letter), 384

PATENT SPECIFICATIONS:
British:
Aeronautics, 46, 67, 131, 306, 373, 397, 441, 485
Batteries and Accumulators, 571
Building, 398
Condensers and Feed-water Heaters, 45, 87, 531, 551
Cranes and Conveyors, 262, 327
Crushing and Grinding, 350
Dynamos and Motors, 23, 67, 131, 198, 219, 239, 283, 327, 349, 373, 419, 464, 551
Engines, Internal Combustion, 23, 45, 67, 87, 131, 153, 175, 197, 219, 261, 283, 305, 327, 349, 373, 397, 419, 441, 464, 485, 509, 531, 551, 571
Engines, Steam, 153, 261, 327, 463
Gas Producers, 131, 349
Lighting and Heating, 24, 110, 154, 176, 240, 283, 305, 398, 571
Locomotives, 45, 349, 464, 552
Machine Tools and Shop Appliances, 23, 68, 88, 110, 175, 220, 239, 262, 283, 306, 328, 375, 398, 485, 509, 532, 551, 571
Measuring and Testing Instruments, 110, 132, 153, 220
Mines and Metals, 46, 197, 350, 398, 510, 552
Miscellaneous, 24, 46, 68, 88, 110, 132, 176, 198, 220, 240, 284, 328, 350, 374, 398, 420, 442, 464, 486, 510, 532, 572
Motor Cars and Road Traffic, 87, 154, 262, 397, 420, 485, 532, 571
Ordnance and Armour, 67, 88, 220, 373, 419, 485
Pumping and Blowing Machinery, 109, 131, 220, 239, 374, 441, 509, 531
Refrigerating Machinery, 349
Ships and Boats, 68, 239, 262, 328, 420, 572
Steam Generators, 23, 45, 109, 239, 261, 305, 327, 397, 463, 485
Switchgear, 109
Telegraphs and Telephones, 131, 153
Textile Machinery, 240
Tramways and Railways, 283
Transformers, 67, 283, 441, 509
Transmission of Power, 23, 87, 109, 131, 154, 198, 262, 306, 419, 441, 464, 571
Turbine Machinery, 87, 197, 463, 531, 551
Water Purification, 306

PAY of Foremen and Shop Managers, 425
Pease, A. F., on the Position of the Coal Mining Industry, 373
Peat, The Utilisation of, 109
Personal and Business Announcements, 24, 45, 66, 88, 110, 132, 152, 196, 238, 260, 304, 350, 374, 393, 419, 464, 486, 508, 552
Petrol Gauze, 462
Petrol Tractor on the Farm, 298
Pipe Thread Tap Heads, 270
Ploughing Tractor, F. R. Simms, 183, 184
Plug Extractor for Shells, M. Glover and Co., 7
Plymouth as a Commercial Port, 224
Pneumatic Ash-handling Plant, Ed. Bennis and Co., 103
Poland, The Industries of, 14
Port, A New, in Colombia, 425; (Letter), 556
Potash from Brine Water, 540—*see also* American Engineering News
Practice in Bridge and Girder Yards—*see* Bridges
Presses—*see* Machine Tools
Prisoners of War, British, and their Studies, 123
Production and Preparation of Raw Rubber, 399, 421, 444, 467
Profits—*see* Excess Profits
Progress in the Metallurgy of Copper—*see* Copper
Pumping, Air-lift, C. Anthony, 526; (Letter), 556
Pumping, Air-lift, Professor A. H. Jameson, 526
Pumping, Air-lift, A. W. Purchas, 446
Pumps, Air, Committee's Report, Experimental Plant, 557
Pumps, Electrically-driven Hydraulic, Automatic Control of, A. Towler, 480
Purchas, A. W., on Air-lift Pumping, 446
Push-button Hoists—*see* Coal
Pyrometers and Pyrometry, 393, 402, 424

Q

QUALITY of Hardness, 295
Quarries—*see* Ministry of Munitions
Quebec Bridge—*see* Bridges

R

RAILWAYS & RAILWAY MATTERS
General:
Aero-steam Railway Traction, Pierre Guedon, 425
Ambulance Trains for the Continent, Midland Railway Carriage and Wagon Works, 358 (*Two-page Supplement, October 26th*, 1917)
Automatic Train Control, W. R. Sykes Signal Interlocking Company, 50
Battery-operated Railway Signals, 124
Brake, Westinghouse or Vacuum, Automatic Train Control for, 50
Career Offered by Engineers' Department of a British Railway, 113
Electrification of Main Line Railways, 563
Longitudinal Sleepers for Railways and Tramways, Signor O. Valeri, 29
Narrow-gauge Self-discharging Wagons for Burma Mines Railway, Blake Boiler, Wagon and Engineering Company, 478
Nine Months' Railway Accidents, 297
Railwaymen, Labour Questions—*see* Labour
Railway Men's Societies, 215

RAILWAYS AND RAILWAY MATTERS (*continued*):
British, Colonial and Indian:
Australian Transcontinental Railway, 356, 362; (Paragraph), 384
Burma Mines Railway Wagons, Blake Boiler, Wagon and Engineering Company, 478
Co-ordination Among Welsh Railways, 189
Future of British Railways, 475, 513, 535, 565
Future of Canadian Railways, 71, 79
Great Eastern Railway System of Automatic Train Control, 50
Great Western Railway Mechanics' Institution at Swindon, 321
Mansfield Railway, 401, 408
New South Wales Railways, 477
North-Eastern Railway Transport of Heavy Castings, 413
Railway Accidents in 1916, 169
Ratho Railway Accident, 63
South African Railways and Harbours, 261
Sudan Railways in 1916, 419
Sydney, City and Suburban Electric Railways of, 144

Foreign:
American Railways and the War, 357
Panama, Light Railway Building in, 314
Peru, Railway Construction in, 67
Virginian Railway, 312, 316

RAILWAY LOCOMOTIVES:
General:
Heating Surface of Boilers for Locomotives, 45
Locomotive Coaling Plant at Carlisle, 12, 18
Shrinkage Allowance for Locomotive Tires, E. L. Ahrons, 263

British, Colonial, and Indian:
Great Northern Railway, Conversion of Compound Engines, 542, 547
London and North-Western Railway, Locomotive Coaling Plant at Carlisle, 12, 18
North-Eastern Railway, Locomotive Performance, 200, 224
South-Eastern and Chatham Railway, New Locomotives on the, 287, 294; (Letter), 323; (Correction), 326 (*Two-page Supplement, October 5th*, 1917)
Types of Irish Locomotives, E. L. Ahrons, 162; (Letter), 184

Foreign
American Locomotives for the American Forces in France, 458
French Railways, Conversion of Single-expansion to Compound Engines, 511 (*Two-page Supplement, December 14th*, 1917)
P.L.M. Locomotive Conversion—*see* French Railway Engines
Paris-Orleans Railway, British-built Tank Locomotives for, 43 (*Two-page Supplement, July 13th*, 1917)
Pennsylvania Railroad Heavy Single-phase Electric Locomotive, 175
United States Southern Railway Eight-coupled Passenger Locomotives, 167

RANDOM REFLECTIONS:
318, 340, 364, 388, 410, 432, 454, 476, 500, 522, 544, 564 (*see Special Index*)

RARER Key Minerals, S. J. Johnstone, 457
Rastrick, John U., Drawing by, 81; (Letters), 118, 228, 248, 279
Reconstruction and Foreign Languages, 493
Reeves, A. W., and C. Kimber on Fuse Inspection, 52
Reform, Patent Law, 521; (Letter), 537
Reform, Patent Law, Dr. F. W. Hay, 435; (Letter), 481
Reform of the Patent Laws, V. A. B. Hughes, 425
Refractories, Papers at the Glasgow Meeting of Ceramic Society, 291
Regenerator and Hot Air Engine of 1816, Stirling's, 516, 517; Stirling's Specification, 567; (Letter), 537
Reinforced Concrete—*see* Concrete
Research, Scientific and Industrial Report, 179, 206, 209, 226, 253, 269, 344
River Diversion at Hanworth Park, 366
Road Sweeping and Loading Machine, F. Walters and Co., 96
Road Vehicles, The Uniflow Engine for, F. W. Marquis, 276
Roads, Concrete, Report to Roads Improvement Association, H. P. Boulnois, 73
Roads of Sheffield, 368
Rogers, Dr. F., on the Acid Open-hearth Process, 276, 297
Roller-welding, Tube, Machine, Hollings and Guest, Limited, 524
Rosario Docks, Improvements, 292
Rouen, The Port of, 459
Rowe, W. T., on Alcohol as a Source of Power, 471
Rubber, Raw, The Production and Preparation of, 399, 421, 444, 467

S

SAMPLING—*see* Coal
Sand Washer, Portable Filter Bed, Hunter and English, Limited, 44
Sankey, Captain H. Riall, on Heat Engines, 489
Sawing Machine, Vertical Band, T. Robinson and Son, Limited, 412
Science, Application of, to Agriculture, 412
Science, Applied, What the Empire Owes to, 351
Science and its Functions, A. A. Campbell Swinton, 447, 476
Scientific and Industrial Research, Committee's Report, 179, 206, 209, 226, 253, 269, 344
Scientific Institutes and Industrial Requirements, 274; (Letter), 323
Scotland, Canal—*see* Mid-Scotland
Scotland, Trade Education in, 289
Scrap, Brass, 118
Screwing Machines—*see* Machine Tools
Sections, Approved British Standard, 567
Sewage Purification, E. Ardern, 94
Shafts, Loaded, Critical Speeds of, W. M. Wallace, 246
Shaw, Clark H., Cement Joints for Cast Iron Water Mains, 32
Sheffield, The Roads of, 368
Shells, Plug Extractor for, M. Glover and Co., 7
Ship Canal—*see* Canal

SHIPS AND SHIPBUILDING:
General:
American Shipbuilding Developments, 261
America's Shipbuilding Problems, 165
Device for Raising Sunken Ships, W. D. Sisson, 386, 389
Electrically-controlled Motor Boats, 425
Government as Shipbuilders, 256
Losses of Ships and Submarines, 556
Marine Engines—*see* Engines
New National Shipyards, 458
Reinforced Concrete Arched Keel Block, Ayrshire Dockyard Company, Limited, 345
Reinforced Concrete Shipbuilding in Norway, 520, 524
Ships and More Ships, 410
Standardised British Merchant Ships, 267, 272, 273
United States, Shipping and Shipbuilding in the, 317

British Navy:
Ariadne, Loss of H.M. Protected Cruiser, 102
Submarine Chasers for the British Navy, American-built, 139
Vanguard Disaster, 57

Naval Matters:
Admiralty Appeal to Workers, 51
American Inventors Attack the Anti-Submarine Problem, 550
Apotheosis of the Destroyer, 499
Cycle in Naval Architecture, 431
Development of Machinery in the United States Navy, Captain C. W. Dyson, 170, 190, 211
Electric Drive for Warships, 228
First Lord's Statement, 409
German Naval Mines, 227
Gunboats and Baghdad, 274
Losses of Ships and Submarines, 556
Monitor, Revival of the, 133; (Letters), 161, 184
Naval Dry Dock at Norfolk, U.S.A., 101
Naval Power-boat Construction in America, 139
Our Naval Strategy, 143
Submarine and Kindred Problems, 329, 550
Submarine War: The Latest Phase, 231

Foreign Navies:
American Naval Programme, The New, 380
American Navy and Mercantile Marine, 256
German Battle Cruiser Graf von Spee, 246
Italian Submarine Chasers, 566
Submarine Chasers, American, 139
United States Cruisers, Turbine Electric Equipment, W. L. R. Emmett, 228

Mercantile and Miscellaneous Vessels:
American Navy and Mercantile Marine, 256
American Wooden Steamships, 332
Fire and Salvage Boat for Elswick, 503
Steamboat, An Early, 81; (Letters), 118, 228, 248, 279, 323

SHOCK Tests, Experiments, &c., Georges Charpy and A. Cornu-Thenard, 244, 265
Shrinkage of Tires—*see* Railway Locomotives
Signals—*see* Railways
Silk, Artificial, T. P. Wilson, 94
Simple Calculations of Circular Arcs, 114
Six-Ton Steam Wagon, Atkinson and Co., 494
Sleepers—*see* Railways
Soap Films, Use of, in Solving Torsion Problems, A. A. Griffith and G. I. Taylor, 536, 543, 546
Societies—*see* Associations
Soda Concentration Plant, Mirrlees, Watson Company, Limited, 34, 44
Soldiers, Maimed, Mechanical Arms for, E. W. Hobbs, 334, 335, 351, 376
South Africa, Irrigation Projects in, 169
South African Railways and Harbours, 261
South American Engineering Markets, 348
South American Machine Belting Market, 531
Speeds, Critical, of Loaded Shafts, W. M. Wallace, 246
Spindles, Attachment of, to Forged Steel Valves, F. M. McLarty, Jun., 153
Standard Sections, Approved British, 567
Standard Ships—*see* Ships
Standardisation of Electrical Machinery, 319
Standardisation of Engines—*see* Engines
Standards, Manufacturers and, 317
Steam Generation, The Use of Waste Gases for, J. B. C. Kershaw, 27
Steam-Hydraulic Intensifier, Inverted, Davy Brothers, Limited, 366
Steam, The Latent Heat of, F. B. Aspinall, 3, 25, 47, 58; (Letters), 162, 184
Steam Wagon, Six-Ton, Atkinson and Co., 494
Steel—*see* Iron and Steel
Stirling's Air Engine—*see* Engines
Stone, G. C., on Oxide of Zinc, 418
Strikes—*see* Labour
Stromeyer, C. E., on the Action of Caustic Liquors on Steel Plates, 496
Submarines—*see* Ships
Submarine Tunnel at Boston, U.S.A., 230, 234, 235
Substitutes in Germany, 509
Sugar Machinery for Argentina, 171
Surfacing Machines—*see* Machine Tools
Suspension Bridges—*see* Bridges
Swinton, A. A. Campbell, on Science and its Functions, 447, 476
Synthetic Nitrogen Compounds, 155

T

TASMANIAN Great Lake Hydro-Electric Power Scheme, 69, 78 (*Two-page Supplement, July 27th*, 1917)
Taxation of Stock Values, 57
Telephone Engineering Progress, 201
Temperature, Measurement of, 432
Testing Department of the Fiat Company, Turin, 504
Testing—*see also* Impact
Thermostat, High Temperature, Further Notes on, J. L. Haughton and D. Hanson, 275, 322

Tin and Wolfram, Trengganu's Supplies of, 297
Tin-plates, &c.—*see* Ministry of Munitions
Tires—*see* Railway Locomotives
Tools—*see* Machine Tools *and also* Works
Torsion Problems, Use of Soap Films in Solving, A. A. Griffith and G. I. Taylor, 536, 543, 546
Towler, Alfred, on the Automatic Control of Electrically-driven Hydraulic Pumps, 480
Towns, H. L., on Welding with Application to Automobile Engineering, 125, 147
Traction Engine, J. Boydell, 111
Tractor, Chain-Track, Evolution of the, 111, 134, 135, 156, 181, 202, 208, 221, 241, 250; (Letter), 184
Tractor, Pedrail, B. J. Diplock, 181, 223
Tractor, Small Agricultural, Design of, A. E. L. Chorlton, 545
Tractor, The Petrol, on the Farm, 298
Tractors and Haulers, British Agricultural, 512, 533, 553, 562
Trade Education in Scotland, 289
Trade, Machinery, after the War, 248
Trade between the United Kingdom and Canada, 118
Trade after the War—*see* Danger of Letting Things Slide
Training of Aeronautical Engineers—*see* Aeronautics
Training of Engineers, 379
Trains—*see* Railways
Tramways, Glasgow Corporation, 122
Tramways, London County Council, 58
Transmission of Concrete by Air and Steam, 159, 164
Transporting a Heavy Casting, 413
Trengganu's Supplies of Tin and Wolfram, 297
Trueman Wood Lecture—*see* Associations, &c., Royal Society of Arts
Tube Roller-welding Machine, Hollings and Guest, Limited, 524
Tunnel, Submarine, at Boston, U.S.A., 230, 234, 235
Turbine Blading, Curtis Rateau, Deterioration of, A. Fenwick, 30, 60
Turner, Professor T., on Hardness and Hardening, 252, 254, 295

U

UNIFLOW Engine—*see* Engines
Use of Culm and Other Waste Fuels, J. B C. Kershaw, 307
Use of Inland Waterways, 526
Use of Soap Films—*see* Soap
Use of Waste Gases for Steam Generation, J. B. C. Kershaw, 27
Utilisation of Peat, 109

V

VALVES, Forged Steel—*see* Iron and Steel
Vertical Band Saw—*see* Sawing
Victoria Works of Yarrows, Limited, 270
Volunteers, County of London Engineer, 24, 45, 68, 87, 110, 132, 152, 176, 196, 218, 239, 248, 284, 305, 328, 350, 374, 397, 419, 442, 464, 486, 510, 527, 552, 570

W

WAGES—*see* Labour
Wagon, Six-Ton Steam, Atkinson and Co., 494
Wagons, Railway—*see* Railways
Walker, G. B., on By-Product Coking, 509
Wallace, W. M., on the Critical Speeds of Loaded Shafts, 246
Walmsley, Dr. R. M., and Mr. C. E. Luard, on the Training of Aeronautical Engineers, 6
Wans, Oswald, on a Comparison of Working Costs of the Principal Prime Movers, 355, 363, 368, 380, 414; (Letter), 384

WAR MATERIAL & WAR MATTERS:
Air Reprisals, 340
American Military Engineers in France, 418
British Steel for Shells, 509
Business of War, 187
Fuse Inspection, A. W. Reeves and Cecil Kimber, 52
German Munitions Supply, 339
Transmission of Military Power, 387

WAR, Some Metals and British Industries, 99
Washer—*see* Gas Washer
Waste Gases for Steam Generation, The Use of, J. B. C. Kershaw, 27
Water Power Supplies of the United Kingdom, 463, 525

WATER SUPPLY:
Cement Joints for Cast Iron Water Mains, Clark H. Shaw, 32
Charges for London Water, 83
Portable Filter Bed Sand Washer, Hunter and English, Limited, 44
WELDING with Application to Automobile Engineering, H. L. Towns, 125, 147
Welsh Labour, 100
West Highlands, Big Water Power Scheme, 463, 525
What the Empire Owes to Applied Science, 351
Whitley Report, Industry and the, 169
Whitley Report—*see also* Labour
Winch, Electric, J. H. Wilson and Co., Limited, 525
Wire Manufacture, History of, J. P. Bedson, 334
Wolff, Dr. E. B., on Failure of Boiler Plates in Service, &c., 296, 456
Women's Work on Engineering Munitions, Permanent Memorial, 496
Working Costs of the Principal Prime Movers, Oswald Wans, 355, 363, 368, 380, 414; (Letter), 384

WORKS:
An Aeroplane Works, 257 (*Two-page Supplement, September 21st*, 1917)
Elswick Works, Fire and Salvage Boat for, 503
Empress Electrical Works, Huddersfield, E. Brook, 342
Smith and Coventry's New Tool Works, 470 474
Victoria Works, Yarrows, Limited, 270

WORKSHOPS, Air Heater for, J. Boyd and Sons, 503
W.R. Combustion Indicator (Correction), 19

Y

YARROWS, Limited, Victoria Works, 270

Z

ZEPPELINS—*see* Aeronautics
Zimmer, G. F., on Coal and Ash Plant at Osaka Electric Works, Babcock and Wilcox, Limited, 115
Zinc, Oxide of, G. C. Stone, 418

Monthly Summary.

A

AERONAUTICAL Events, 1, 90, 199, 285, 375, 376
American Railway Rates, 2
Australian Transcontinental Railway, 375

B

BRITISH Aeronautical Activity, 487
British Bombing Raids, 286

C

CHARGES for London Water, 89
Charing Cross Bridge, 91
Coal Transport Reorganisation Scheme, 89
Co-operation in Industry, 2
Coventry Strike, 487

E

EDUCATION of Commerce and Industry, 89

F

FOREIGN Trade, 90
Forth and Clyde Canal, 2
Fuel Research, 375
Future of Canadian Railways, 2
Future of the Steel Trade, 285

G

GERMAN Air Raids, 487

H

HONOURS, New, 200

I

INDUSTRIAL Development Schemes, 488
Industrial Unrest, 91
Irish Peat Committee, 91

L

LEAVING Certificate, 285
London County Council Tramways, 90

M

MIDLAND Bureau of Standards, 376
Mid-Scotland Canal, 90
Munitions of War, 1

N

NATIONAL Electric Supply Problems 199
National Shipyards, 487
Naval Events, 90, 286, 487
Naval Incidents, 2, 199, 375
New Port Schemes, 285

P

PORT Development at Plymouth, 487
Prentices, 89

Q

QUEBEC Bridge, 285

R

RAILWAYMEN'S Demands, 487
Railway Strike, Threatened, 199
Railways and Tramways, 487
Reconstruction, 1
Research, 199

S

SHIPBUILDING Position, 1
Shipbuilding Yards, New, 200
Shunting Movements on Railways, 89
Standard Ships, 200

T

TRAINING of Engineers, 375
Two Railway Accident Reports, 2

W

WATERWAYS Control, 199
Welsh Railways, 89
Whitley Report, 375
Works Canteens, 488

Z

ZEPPELIN Raid, 375

Random Reflections.

A

ACID and Basic Steel, 364
Aeroplane Engines, 318

B

BANKS, 564
Boiler Failures, 500

C

CARNEGIE and Research, 564
Chemists, 411, 433
Colleges and Economy, 432
Compound Units, 410
Cost of Power, 365

D

DENNY, William, 340
Discovery, 455
Discovery and Invention, 523

E

ECONOMIC Laws, 318
Employment Market, 500
Engineering and the Public, 476
Engineering Training, 388
English as She is Writ, 501
Environment and Invention, 364
E.S.C. Reports, 389
Essential Metals, 523; (Letter), 537

F

FAMOUS Trial, 522; (Letter), 537

H

HEAT Engines, 500
History, 501
House Organs, 544

I

INDUSTRIAL Reconstruction, 319
Institutions, 433
Institutions and Research, 564

L

LOCOMOTIVES, 364

M

MARINE Caterpillars, 318
Medals, 522
Merchants, 411
Motor Omnibuses, 433
Museums, 523

N

NITROGEN, 477

O

OF Offices, 454

P

PATENTS, 455
Perpetual Motion, 454
Power Supply, 544
Premium Apprentices, 389
'Prentices, 433
Public Lectures, 433
Pumping Engines, 522

R

RAILWAY Rates, 477
Rating of Machinery, 389
Reconstruction, 410
Re-Creation and the Salariat, 388
Regenerator, The, 523
Research, 341
Romance of Science, 410

S

SHOP Stewards, 565
Short Week, 340
Simplicity, 389
Soixante-quinze, 432
Some Ticklish Problems, 388
Steam Gun, 565
Submarines, 340
Success, 523
Suspicion, 411

T

TECHNICAL Lending Libraries, 365
Tonnage, 318
Trials, 454

U

UNIFLOW Steam Engine, 341

V

VALUE of Ignorance, 433

W

WAGES, 544
Wages and the Cost of Living, 477
War Finish, 544
Wasted Efforts, 454
Whitley Scheme, 341
World Made Perfect, 476

Paragraphs.

A

ABRASIVE Manufacturing Plant, Large, at Quebec, 207
Acetone for Production of Synthetic Rubber, 97
Aerial Wire with the Key-Morse Apparatus; Length Limitations, 119

AERONAUTICS:
Aerodromes or Flying Fields, 55
Aero Engines and Parts, Urgent Demand for, 163
Aeroplanes in America, Difficulties with Four-bladed Propellers, 119
American Inventor's Aeroplane to End the War in Sixty Days, 141
Aviation Engine Development, E. H. Sherbondy, 541
"Borrodising" as Preventive of Corrosion, 315
Fireproof Varnish for Aeroplanes, 407
Horse-power in Relation to Weight, Greatly Increased Proportion in Modern Aeroplanes, 497
Long Distance Aeroplane Record by Italian Captain, J. Laurenti, 229
Motors, Aeroplane, 10,000 Orders Taken by One American Firm, 229
Planes of Flying Machines, Experiments in America, 547
Postal Service by Aeroplane, 190
Radiators, Aeroplane, Standardisation of, 234
Royal Flying Corps and the Royal Naval Air Service, 552
Seaplane for Training Purposes in the United States, Lieut. G. D. Murray, U.S.N., 519
United States Aeroplane Makers and Metric Measurements, 229
United States Airplane, Vacuum Chamber for Testing Engines, 541
United States Aviation Engine, Advantages, 361
Warning of Air Raids, Tests of Various Methods, 55

AFRICAN "Da" Fibre for Rope Making, 519
Agricultural Machinery for Ministry of Munitions, 77
Agricultural Machines for France after the War, Government Action, 229
Agriculture by Mechanical Aids, Great Increase Expected, 119
Alcohol, Denatured, and Anti-freezing Precautions, 473
Alcohol and Petrol, Power from, 315
Alcohol, Synthetic, Manufacture on Commercial Scale in Switzerland, 207
Alloy, Copper and Zinc, Proportions and Use, 541
Alloy, New Anti-friction Type, 497
Alloy for Ships' Propellers, 249
Alloy Steel Castings for Dies in America, 163
Alloys, Iron-Aluminium and Iron-Silicon for Electro-Magnetic Uses, 77
Alloys, Iron-Silicon, Acid Resisting Properties of, 163
Aluminium Output from Foyers and Kinlochleven, 73
Aluminium Pistons for Internal Combustion Engines, J. Leopold, 55
Aluminium, Possible Extraction from Staffordshire Clay, 293
Aluminium Scrap, Fluxes for Melting, 473
Aluminium Scrap, Methods of Melting, 185
Aluminium Works in Hungary, 497
American Co-ordinating Committee on Exportation, 518
American Society of Civil Engineers Abandons Convention for 1917 owing to War Work Demands, 15
Amethyst Colour Development in Glass, 271
Ammonia Production in Germany, 76
Ammonia, Sulphate of, United States Production, 315
Anthracite—*see* Coal
Anti-Submarine Net at a Cost of Twenty Millions Sterling, A Suggestion, 293
Antofagasta Port Improvements, Tenders in London Called for, 163
Artesian Basin of Australia, Largest Known in the World, 385
Artesian Wells in Perth, Failure of Attempt to Utilise, 519
Artificial Colouring Matter in the United States, Large Capital Invested, 293
Artificial "Tides" Utilised for Coal Transportation on the Ohio River, 293
Asbestos Industry of the United States, 229
Asphalt, Paraffin, &c., "Natural," Produced in the United States, 163

ASSOCIATIONS, INSTITUTIONS & SOCIETIES:
ASSOCIATION OF ENGINEERING AND SHIPBUILDING DRAUGHTSMEN:
HARTLEPOOLS SECTION:
(Tees-side and Hartlepools Branch)
Second Annual General Meeting, 484
LONDON BRANCH:
Annual General Meeting: Reorganisation of the Association, 357
INSTITUTE, IRON AND STEEL:
Autumn Meeting; List of Papers, 198, 239
INSTITUTE OF METALS:
Autumn Meeting, 24
Diamond Formation, Lecture by Sir Charles Parsons, 497
Memberships Question: Extra Election, 24
INSTITUTION OF CIVIL ENGINEERS:
Awards for Papers, 440
DUBLIN SECTION:
Inquiry as to Available Hydro-electric Power in Ireland, 270

ASSOCIATIONS, INSTITUTIONS & SOCIETIES (*continued*):
INSTITUTION OF ELECTRICAL ENGINEERS:
Electric Steel Furnaces, E. Kilburn Scott, 55
Non-Ferrous Metals Bill, 552
INSTITUTION, JUNIOR, OF ENGINEERS:
Cadet Associate Membership, 207
INSTITUTION OF MECHANICAL ENGINEERS:
Proposals for Compulsory Adoption of Metric System, 177
INSTITUTION, ROYAL:
Before Easter Programme, 531
Before Easter Friday Programme, 570
Christmas Lectures, 464
Donations for Experimental Research, 413
Meetings and Elections, 24, 509
SOCIETY OF ENGINEERS:
Goods Clearing House System and Machinery Explained, Paper and Demonstration, A. W. Gattie, 39
SOCIETY, FARADAY:
Pyrometers and Pyrometry, 323
SOCIETY, OPTICAL:
Optical Stores Captured from the Enemy, Lieut.-Col. A. C. Williams, 437
SOCIETY, ROYAL, OF ARTS:
Albert Medal Awarded to Mr. Orville Wright for Aeronautical Work, 11
Awards of Medals, 11
Howard Lecture by Mr. W. G. Fearnsides, Favourable Prospect for Iron and Steel Manufacturers in Eastern England, 361
SOCIETY, ROYAL METEOROLOGICAL:
Abnormal Temperature, &c.; Daily Temperature at Greenwich, W. W. Bryant, 486
Computation of Wind Velocity from Pilot Balloon Observations, P. Bolton, 570
Twelve-hourly Barometer Oscillation, Dr. G. C. Simpson, 486
Use of Monthly Mean Values in Climatological Analysis, E. G. Bilham, 570
ASTRONOMICAL Error in 1 B.C., 247
Atlantic Cable Used for Thames Bridge, 118
Australian Defence Department, Proposed Plant for Benzene and Toluene Production, 59

B

"BALSA," Valuable New Tropical Wood, 541
Bangkok, Siam, Use of Electric Vehicles, Independent of Coal Supply by Use of Rice Husks, 429
Barrow, Record Amount of House-building, 337
Basic Slag for Agricultural Purposes, 385
Belt Transmission, Thickness Fallacy, 561
Bennis and Co., Lantern Slides, 384
Benzene and Toluene Production in Australia, 59
Benzol Production by Gas Authorities Unprofitable at Present Price, 293
Benzol Production and Use After the War, 451
Bequest to University of Liverpool, 541
Birmingham Gas, Analysis of Use during Year, 141
Birmingham House Shortage and Town Planning, 97
Blackpool Cliff Protection, 315
Board of Trade Commercial Intelligence Department and New Industrial Developments in United Kingdom, 207
Boiler Corrosion Preventive, 271
Boiler Furnace Excess Air, CO_2 Percentage Measurement, 519
Boiler House Operations, &c., Comparison between Steam Turbines and Boilers, Messrs. Otley and Pickles, 519
Bombs Dropped by Aircraft, Necessary Precautions, 55
Bonuses for Female Workers in France, 547
Boracic Acid in Arc Lamps, 97
Brass Melting by Electric Furnace, Investigation at Cornell University, 249
Bridge in California, Concrete Arch Span Settling Without Cracking, 55
Bridge Design, Economies of, Dr. J. A. L. Waddell, 497
Bridge Designs, Standard, for Ontario, 97
Bridge Erecting Methods, A Forward Step, 271
Bridge Piers Obstruction to Flow of Water, Forthcoming Paper by Floyd A. Nathan, 11
Brinell Hardness Test of Metals, Monsieur Guillery, 429
British-built Magneto on French Designs, 293
British Empire Food and Raw Material Resources, Imperfectly Utilised, 473
British Engineers' Association, Annual Meeting, 105
British Industries Fair in 1918, 407
Building Cost to be Doubled for Many Years to Come, 141

C

CALCUTTA'S Motor Vehicles, 97
California and Earthquakes, 256
California, Large Unmapped Area of Fertile Territory, 185
Canada, Hydro-electric Power Possibilities, 429
Canada, Munitions and Supplies Purchased from, in Three Years of War, 497
Canada, Return of Industrial Activity, 407
Canada's Metal and Mineral Production, 271
Canadian Scientific and Industrial Research, 55
Capper, Major-General J. E., Director-General of the Tank Corps, 229
Carbon and Graphite Electrode Manufacture in Norway, 429
Carbon Monoxide in Mines, Simple Test for Detecting even Minute Amount, 337
Cardiff, Election of Engineer and Surveyor, 541
Castings of Chromium-Copper Alloys, Method of Preparing, 315
Castings, Large and Small, Scrapping Economy, 22
Cellulose Acetate for Varnish Manufacture, 497
Cellulose Piping, Compressed, Satisfactory in General Use, 141; as Substitute for Metal, 385
Cement for Fastening Metal Parts to Marble, 97
Cement Industry in Japan, 249
Cement Mill near Guatemala City, Large Capacity and Low Cost of Product, 11
Cemented Surface, Coating by the Nicholl Process, 33
Ceylon, New Port at Aragam Bay, East Coast, 163
Charcoal and Conservation of Timber in Sweden, 337
Chelmsford, Works' Sports for Charity, 196
Chemical Industry in Switzerland, War Scarcity of Raw Material, 315
Chemists, Industrial, National Association of, Proposed, 109
Chicago Meat-canning Factory's Great Increase in Steam Generating Plant, 141
Chimney, 570ft. High, in Japan, 185
China's Use of Electricity and Neglect of Gas, 315
Chinese Export Trade and Government Assistance, 119
Chinese Factories, Details of Industries and Equipment, 497
Chinese Imitation of Foreign Trade-marks, British Complaints, 141
Chisel, Best Method to Harden and Temper, 337
Chlorine, Best Temperature for Electrolytic Production of, 229
Christmas Gifts for the Labour Battalion, 462
Chromite Production in the United States, A Record Year, 337
Clay-working Cinders, Value for Fuel, R. G. Lovell, 451

COAL, COKE, AND COLLIERIES:
Anthracite Coal, W. H. Booth, 33
Anthracite Discovery in the Alps, 337
Calorific Value of Coal, Deterioration Since Outbreak of War, 271
China, Pinghsiang Collieries, 163
Coalfield Seams Burning in Large Area of the United States, 11
Coal Mines, Breathing Apparatus, Scientific Research Council Inquiry, 97
Coal Mining Regiments, Question of United States Raising them for France, 561
Coal Shortage in North-West America, Prohibition of Shipments to Canada, 337
Coal for Steam Production, Advantages of Welsh Anthracite, W. H. Booth, 33
Controller of Coal Mines, Address and Code of Directions, 11
French Output of Coal, 315
India, North and West, Disappointing Coal Supply, Suggested Substitution of Hydro-electric Power, 315
Indian Collieries and Use of Electricity, 11
Indian Minerals, Coal the Most Important, 293
Italian Coal Discovery, 97
Oklahoma and Kansas, Shallow Coal-beds Working, 293
South African Coal, High Percentage of Tar, 293
United States, Possible Shortage of Coal, and Wood Fuel as Substitute, 185

COAL Gas for Motor Cars, 531
Cold Storage and Ice Making, Liverpool Experience, 429
Cold Storage Warehouses for United Kingdom Food Supply, 541
Commercial Alcohol from Damaged Potatoes 540
Commercial Motors, Annual Inspection of, Prizes, 552
Concrete, Best Colours for Colouring, 11
Concrete for Cheap Building, A House every Three Days, 407
Concrete Fence Posts and Attachment of Wire Fencing, 163
Concrete Fence, Reinforced, for Great Yarmouth, 385
Concrete, Reinforced, Action of Salt on, Professor H. J. M. Creighton, 572
Concrete, Reinforced, Examined by X-rays, 492
Concrete, Reinforced, Injurious Action of Salt in the Philippine Islands, 561
Concrete Roads, Emulsified Asphalt for Maintaining, 229
Concrete Silos for Wheat Storage in Australia, 497
Concrete for Small Buildings, 385
Concrete as a Substitute for Timber, Bricks, Iron and Steel, 396
Copper and Lead of Serbia Exploited by Germans and Austrians, 229
Copper, World's Production of, 197
Coral Carving, Japan Endeavouring to Replace Italian Production, 519
"Corimite," Insulating Material Made from Fish Offal, 451
Corrosion of Tinned Copper Sheets, 119
Cotton Spinning and Weaving Industry in Korea, 561
Crane, Floating, Largest Lifting Crane Built in United States, 407
Crane, 50-Ton Locomotive Jib, for Panama Canal Docks, Unusual Type, 119
Crinan Canal, Inadequacy of, and Suggested Replacement, 207

D

DANUBE Navigation and Ports for Increased Trade Development, 451
Death of Mr. W. J. Widdowson, 541
Decimal Coinage and Metric System of Weights and Measures, Opinions Invited, 361
Deoxidisation, Electrolytic Process Patented in the United States, 229
Diamond Drill Hole in New Jersey, Record Depth, 271
Diamond Formation, Sir C. Parsons, 497
Diesel Engine Driven by Peat Gas, 519
Dock, Royal Edward, at Avonmouth, Projected Enlargement, 519
Draughtsmen, Increased Pay, 413
Dry Rot in Timber, Drastic Action Necessary, 337

E

EGGS, New Method for Safe Delivery, 473

ELECTRICAL MATTERS:
Applications of Electricity, List of 3000 in Booklet, 77
Arc Lamps, Uses of Boracic Acid, 97
Arc Welding, Continuous Current Superior to Alternating, 541
Arc Welding, Suitable Electric Conditions for, H. L. Unland, 407
Armature Shafts on the Commutator End of Motors, Novel Method of Repair, 77
Army Cooking by Electric Oven, 429
Belfast, Electricity Supply Possible from Tidal Power of Strangford Lough, 163
Blast-furnace Tap-holes Opened by Electric Arc, 541
British and Metric Systems as Affecting British Electrical Trade, 451
Calcutta, Cheap Current for Cooking and Heating, 11
Capacity of Single Turbo-generator Units, Limitation in Size, 473
Cattle Driving by Electricity, 141
Cauvery Power Scheme in Mysore, Conveyance of Very Heavy Machinery, 119
Centralisation of Power and Profit from By-products, Enormous Gains Possible, H. Wilson-Fox, 429
Charging Plugs and Sockets for Electric Vehicles, 437
China's Preference for Electricity, 315
Commercial Motor Vehicles, Electric, Projected Expenditure, 33
Committee on Electric Power, Chairman and Additional Members, 11
"Continuously Loaded" Paper—Core Cable for Underground Telephone, 97
Current Transformers and Possible Registration Errors, 497
Economy in Use of Electric Furnaces to Convert Steel Scrap into Castings, E. Kilburn Scott, 55
Electro-Chemical Industries at Shawinigan, Quebec, 561
Electro-Culture, Results of, on Garden Produce, 407
French Production of Iron by Electric Furnaces, 11
Furnaces, Government Permit and British Steel Making, 249
Furnaces at Work in Great Britain, Statistics of Increase and Type, 11
Generating Costs per Unit, J. Shepherd, 55
German Pocket Torch with Hand-driven Dynamo, 429
Harrogate, Proposed Installation of By-product Steam Boiler Plant for Electrical Supply, 163
Indian Collieries and Electrical Winding, 11
Indian Collieries, Electricity Replacing Steam, 11
Insulating Material from Fish Offal, 451
Japanese and the Australian Market for Electrical Supplies, 497
Lamp Voltage, Standardisation of, 385
Leeds' Increased Electricity Supply, 429
Morocco, Suggested Water Power Development and Electrification of Railways, &c., 315
Niagara Falls, Cost of Power from, 293
Nickel Alloys Used for Centre Electrodes of Sparking Plugs, 451
Optical Pyrometer for Works Use, 249
Porcelain Insulators Made in the Transvaal, 519
Power Transmission Lines Nearly 700 Miles in Length, 293
Power Transmission Lines of Nevada, California Company's System, Longest Yet Projected, 11
Quebracho, for Cleaning Electric Insulators, 141
Selenium Cell Produced by Californian Experimenter, Immensely Increased Sensitiveness, 33
Standard Voltages of Electric Supply in the United States, 249
Steel Mills, Rolling and Reversing, Advantages of Electric Motor Drive, 33
Street Cleansing Vehicles in Sheffield, Satisfactory Economy Effected, 141
Street Cleansing Vehicles; Ten Years' Life, 119
Swedish Output of Electric Furnaces, 519

ELECTRICAL MATTERS (*continued*):
Tata Hydro-electric Power Supply, Great Success, 561
Taxicabs, Electric, in Detroit, 497
Transmission Line Over the St. Lawrence River, Details of Erection, 77
Tungsten Wire Importation for Electric Lamps, 450
Turbo Alternator Development, History of, 519
United States Electric Furnaces, Large Increase, 451
Water Power and its Utilisation in France and Elsewhere, 561
Wellington, New Zealand, Storage Battery Truck for Use on the Water Front, 361
ENERGY Required for Rain Production, J. Patterson, 473
Engineers' Clubs in Manchester and in Philadelphia, 249
Engines, "Uniflow," World's Records of Efficiency, 141
Envelope-opener for Office Use, 119
Envelopes Placed in Typewriter by Machine, American Device, 163
Explosives Output in the United States, 163
Exports Prohibited by Board of Trade, Lists of Articles and Countries, 185
Eyesight of Workers, Offer by Institute of Ophthalmic Opticians, 519

F

FALL of a Stone to Earth's Centre, Calculations of Time Required, 561
Federation of British Industries, New President, 413
Feed-water for Boilers, Troubles Due to Sodium Hydroxide, 77
Fiat Company's Twenty-three Thousand Workpeople, 293
File-cutting Machines, First Recorded Use in this Country, 385
Fire-brick, Melting Points of Various Samples, 185
Fires in New York State, Large Proportion of Preventable Loss, 55
Fishing Boat to Catch 60,000 lbs. of Fish an Hour, 229
Flour Waste in Iron Foundries, Wood and Sawdust as Substitute, 141
Fluorine—*see* Water Supply
Food Production and Tractors; Training Drivers, 315
Foremen's Mutual Benefit Society, 397
Fruit Centres for Pulping or Drying Surplus Fruit, 180
Fuel, Alcohol, from Sugar Molasses in Australia, 337
Fuel Gas from Straw—*see* Straw
Furnace Design, Principles of, A. D. Williams, 293

G

GAS and Industrial Efficiency, 497
Gas, Natural, 40,000 Bore-holes in the United States, 497
Gas Replacing Petrol for Commercial Vehicles, 97
Gas Supply of America and Toluol for High Explosives, 271
Gas Supply and Investigation by Fuel Research Board, 55
Gas Traction, Joint Committee on, 393
Gauges Tested for Ministry of Munitions by National Physical Laboratory, Ten Thousand a Week Average, 11
German Use of Yeast for Manufacture of Buttons and Knife Handles, 97
Germans Dismantling Blast-furnace Plants for Use in Munition Works, 451
Germany, Coal Prices and Gas Consumption, 319
Glass for Cooking Utensils, Chemical Product, 293
Glass from German Firms, 112
Glass Tubing of Large Diameter, Simple Method of Cutting, 361
Glass, Window, Working Temperature of, 411
Glycerine Industry, Japanese, Developments, 138
Government Changes, 55
Graphalloy, 497
Graphite, Flake, from Ceylon and Madagascar, 135
Graphite in Oils, &c., To Obtain Permanent Suspension of, C. H. Bierbaum, 361
Graphite for Scaling Boilers, 473

H

HOLLAND, Blast-furnaces and Rolling Works in, Suggested Erection of, 77
"Horse-power Race," Professor A. E. Kennedy, 119
House Deficiency in this Country, Local Government Board Inquiry, 519
Hungarian Aluminium Works for Exploiting Bauxite Deposits, 271
Hydraulic Power Installation in South Africa, The Largest, 293
Hydrogen, Atmospheric, Proposed Works for Production in Iceland, 519
Hydro-technical Laboratory in Italy, 415

I

INDIA'S Disappointing Coal Supply; Suggested Substitution of Hydro-electric Power, 315
India, Survey of, General Report, 293
Indian Agriculture, Mechanical Cultivation Progress, 249
Industrial Reconstruction Council, 530
Interest Chart, Marsden and Co., Limited, 162
Ireland, Inquiry as to Available Hydro-electric Power, 270
Irish Canals Placed under Control of Committee, 55
Irish Joint Committee of Engineers to Consider Peat Utilisation, 33
Irish Water Power Schemes, Tidal Power of Strangford Lough, 163

IRON AND STEEL:
Alloy Steel Castings Used by American Drop Forging Manufacturers, 163
Alloys, Iron Silicon, Acid-resisting Properties of, 163
American Production of Steel Ingots and Castings, 11
Annealing Temperatures for Nickel Steel, 385
Atmospheric Effects on Sheet Iron, 315
Australian Company Erecting Works for Home Supply of Spring Steel, Railway Wheels and Axles, &c., 207
Chilled Cast Iron Car Wheels; Effect on American Railways, 407
Chilling of Cast Iron, An Accidental Discovery in the Eighteenth Century, 185
Chinese Pig Iron for United States Shipbuilding, 451
Corea, Output of Ore of Poor Quality but Abundant Quantity, 163
Corrosion and "Borrodising," 315
Electric Motor Drive in Steel Mill Service, Advantages of, 33
Electric Steel Furnaces, E. Kilburn Scott, 55
Electric Steel Making and Limitation of Furnaces, 249
German High-speed Steel, New Type, 541
Hardening of Steel, Frenchmen's Solution, 315
Indian Pig Iron for San Francisco, 11
Iron-Aluminium Alloys, Messrs. Yensen and Gatward, 301
Japanese Steel Works Projected for Manufacture of Plates, Rails, Square and Bar Steel, &c., 33
Japan's Use of Electricity in Steel Manufacture, 337
Lincolnshire, North, as Centre for Steel Manufacture, 337
Manganese in Fire-box Steel, Specified Percentage, 249
Manganese Shipped from China to Japan, 429
Molybdenite of Low Grade; Cheap Process of Manufacture, 207
Molybdenite Shipments from Quebec, 163
Molybdenum Steel, Great Value of, as Gun Lining, 55
New South Wales Manufacture of Steel Wheels, 141
New South Wales Steel Works, Demand for Rails and Shipbuilding Plates, 249
Reagent in Steel Investigation, Messieurs Le Chatelier and E. L. Dupuy, 451
Resources and Production of Iron and Other Metalliferous Ores, 109
Steel Business Origin Claimed by an American, 541
Steel Foundry in the Yangtze Valley, Japanese and Chinese Agreement, 119
Steel Shortage in Canada; Shipping and Railway Needs, 141
"Swedish" Iron and Hematite Supply, Favourable Prospect for East England Iron and Steel Manufacture, 361
Tungsten, Uses in Electricity, 207
United States Steel Castings, Percentages of Kinds of Steel and Methods of Productions, 11
Wrought Iron, Cost of, Compared with Steel, G. G. Roberts, 315
IRISH Production of Antimony and Lead, 451
Irrigated Lands in Australia and the Barren Jack Dam, 473
Italian Government Schemes for Hydraulic Development, 361
Italian Internal Waterways, Periodical to Deal with Question, 185

J

JAPAN Boating—*see* Ships
Japan Builds 9000-Ton Steamer for British Owners in Less than Three Months, 207
Japan as Competitor in Incandescent Lamp Trade, 361
Japanese Glycerine Industry Development, 407
Japanese Scientists Sent to United States to Study Industrial Conditions, 385
Japanning Process, Double Operation, 337
Japan's Copper Ore Output and Exports, 185
Java, Increased Sugar Production, 185
Jute Substitute in Russia, 77

K

KAISER and Czar in 1904, 207

L

LABOUR Accidents, Calendar of, 451
Lamp, Gas-filled Type, with Renewable Filament, 561
Land under Plough in England and Wales, Large Increase, 11
Lantern Slides, Bennis and Co., 384
Lead Mines in Flintshire to be Reopened, 97
Lead Production in Certain States of America, 385
Lead Trade Development in Derbyshire, 429
Leicester Town-planning Scheme for After the War, 55
Lightning Flash, Length and Quantity of Electricity, 229
Lignite, Distillation of, for Tars, 451
Lincoln Housing and Town-planning Schemes, 497
Liquid in Air, Method of Determining Surface Tension of, 541
Liquid Ammonia, Latent Heat of Vaporisation of, N. S. Osborne and M. S. Van Dusen, 451
Liquids in Capillary Tubes, Bigelow and Hunter and Mr. W. D. Bancroft, 561
Locks on Canals, Comparison between England and Germany, 55
London County Council Training of Munition Workers, 127

M

MACHINE Shop for Ford Motor Company, Remarkable Construction, 407
Machine Telegraph Development, Anticipated Success, 429
McNicholl Process for Coating Freshly Cemented Surface, 33
Magnesia Bricks, Refractory Properties of, Messieurs H. Le Chatelier and B. Bogitch, 451
Magnetic Separators for Minerals, Varying Strength, 97
Magneto Industry, British Developments, 97
Manchester Corporation Omnibuses, Statistics of Running, 11
Manufactures Formerly Obtained from Germany, Demand in England, 77
Megaphones for Submarine Detection, 519
Metal Cutting by Revolving Smooth Steel Discs, 541
Metal Economy, Discovery of Wasted Dies, 561
Metals, Boiling Points of, and Pyrometric Work, C. R. Darling, 497
Metric System, Proposals for Compulsory Adoption, 77
Mid-Scotland Canal, Work for Demobilised Men after the War, 473
Milling Machines, C. Churchill and Co., 486
Mineral Wool, Pure White, Uses of, 385
Mines in the Transvaal and Kimberley, Prevention of Pneumonia in Natives, 293
Mining Plant in South Africa, 561
Mining Timber, Substitute for, Patented, E. Seward, 119
Ministry of Health, 552
Molybdenum—*see* Iron and Steel
Monazite Discoveries and German Control, 249
Monazite in Mysore, Disappointing Result, 361
Monazite Sands for Gas Mantles, Discovery in Ceylon, 249, 473
Motor Car Engines, Battery System of Ignition, 337
Motor Car Engines, Cracks in Water Jackets, 140
Motor Car Manufacture Replaced by Aircraft Motors, 519
Motor Car Weight and Improved Construction, 55
Motor Car's Record Speed, 473
Motor Cars in America, Exhaust Cut-outs Discontinued, 361
Motor Industries, Technical Committee, Bodies Represented, 473
Motor Lorries for War Use Ordered in the United States, Large Orders, 293
Motor Lorry Accommodation, Better Utilisation of, 77
Motor Omnibuses, Taxation and Upkeep of Roads, 33
Motor Ploughing in England and Wales, Cost per Acre, 561
Motor Spirit, Standardisation of, Tests and Paper by Mr. Lomax, 429
Motor Taxation in France, New Formula for Determining, 337
Motor Tire Manufacture in America; Own Mills and Own Cottonfields, 207
Motor Trucks and Automobiles for United States War Department, Standardisation and Large Output, 385
Motor Vehicles and Coal Gas, 315
Motor Vehicles, Gas-driven, 97
Motor Vehicles, Suspension System of Improved Type, 315
Motor Vehicles, to Value of Over Six Millions Sterling Ordered by the United States, 141
Motor Volunteers, City, and Invasion, 384
Mowra Flower, Important Raw Product in Hyderabad, 119
Municipal Engineering and Public Health, Effect of the War on, H. P. Boulnois, 328
Munition Workers' Training under London County Council, 127

N

NATIONAL Association of Industrial Chemists, Proposed, 109
Natural Gas Used for Lighting Pisa, 271
Negro Emigration from Southern States of America Discouraged, 11
New South Wales Imports and Exports, 407, 497
New South Wales Mineral Output, High Value in 1916, 185
New South Wales, Value of Mineral Exports, First Quarter, 1917, 229
New York State Barge Canal Completion, 97
New York, Weight of Traffic and Pavement Composition, 429
New Zealand, Discovery of Scheelite, 55
New Zealand Government and Factory Heating Appliances, 473
New Zealand, Hydro-Electric Projects for the North Island, 97
New Zealand, Increased Cold Storage since War Outbreak, 561
New Zealand; Sulphuric Acid Works in Christchurch, 385
Niagara Falls and Shortage of Water Power both in Canada and United States, 271
Nickel-Copper Ore, New Discovery in Ontario, 261
Nickel in Ontario, 80 per Cent. of World's Supply, 497
Nitrates, Synthetic, in the United States, 315
Nitric Acid by Fixation of Atmospheric Nitrogen Process, Comparison of Cost by Different Methods, 11, 77
Nitrogen Products Committee's Report, 541
Nitro-Starch as Blasting Explosive, Advantages of, 33
Noise of Trucks on Concrete Floor, Method of Deadening, 33
Nottingham City Engineer, Mr. A. Brown's Long Service, 541

O

OIL for Burning, Advancing Price, 271
Oil-forming Conditions in the British Isles, W. H. Dalton, 519
Oil Production of the United States, 561
Omnibuses Run on Coal Gas Instead of Petrol, Great Saving in Cost, 11
Ontario Government and Net Fishing, 271
Optical Glass: The Real Introducers of New Materials, 473
Orange River Falls, South Africa, 407
Oven for Electric Cooking for Army Use, 385

P

PAINT as a Rust Preventive, Experiments, 319
Panama Canal, Big Docks to be Built, 315
Panama Canal and Railroad, Improved Health of Employees, 185
Paper and Lectures for West of Scotland Institute, Difficulty in Obtaining, 229
Papyrus in North Zululand, Company Formed to Utilise, at Christiania, 207
Paraffin for Motor Tractors, Question of Lower Prices, 293
Paris, Flood Prevention and Navigation Improvement Works, 293
Paris Tramways, Increased Working Expenses, 293
Patents, Statistics of Applications, 33
Peat Gas for Driving Diesel Engine, 519
Petrol Consumption in France, Restrictions and Reserve Stock, 385
Petrol Extracted from Natural Gas in the United States, 337
Petrol Imports into United Kingdom, 97
Petrol Production in the United States, 271
Petrol Shortage, Problem in United States, 361
Petrol, Synthetic, from Kerosene or Paraffin at Cost of ½d. per Gallon, 163
Petrol Waste, Mr. W. Joynson-Hicks on, 97
Petroleum in Burma, Increased Output, 249
Petroleum, Natural Formation Secret not yet Discovered, W. H. Dalton, 519
Piles of Steel Pipe with Concrete Lining, 337
Pistons for Internal Combustion Engines, J. Leopold, 55
Platinum, Difficulty in Finding Alloy for, 271
Platinum Discovery in Southern Spain, 271
Platinum in Manitoba, 406
Platinum for Military Purposes, 229
Platinum Output of the World in 1916, 11
Platinum Substitute; Alloy of Gold and Palladium, 119
Ploughing by Motor Traction, Forty Acres in Six Ten-hour Days, 497
Plymouth Harbour, Development of Cattewater Lower Reaches, 473
Pneumonia Among South African Native Miners, Success of Inoculation, 185
Port Kembla, New South Wales, 385
Portugal and New Industries; Large Iron and Steel Works, 229
Postal Services by Aeroplane, Established and Projected, 190
Potash from Feldspar, 229
Potash Salts Production in United States, 97
Potash Scarcity in Germany; Trade Apprehensions, 473
Production Limit; The Human Factor in Industry, G. E. Toogood, 537
Prohibited Exports from British Empire, 55, 77
Protected Occupations, Scrap Metal Collection, Dr. Addison, 38
Punch, Press Mud and the Ministry of Munitions, 271
Pyrometer, Optical, for Works Use, 249
Pyrometers and Pyrometry, Instruments Shown and General Discussion, 323

Q

QUEBEC New Dry Dock, Largest in the World, 141
Queensland, Mineral Output of, 515

R

RAGS of the British Army, High Prices Paid, 55

RAILWAYS AND TRAMWAYS:
Accident Due to Sleeping Engine Driver, 385
at Finchley-road Station, Need of Automatic Signalling, 271
Scotch Express, 561
to Soldiers' Train in Yorkshire, 271
Tramway, at Dover, 185, 429
Accidents, Prevention of, Harriman Medal Awarded to Illinois Central Railway Company, 6
Air Raid Shelter in Hitherto Unopened Railway Tunnels, 407
Air Raids and Ventilation of Tube Railways, 361
Alaskan Railway, Completion Hastened to Bring About Advantages of all Kinds, 163
Albert Medal for Life Saving, Award, 561
Ambulance Train of Sixteen Coaches Built in Fifteen Weeks by Midland Railway, 229
American Engineers and French Railways, 315
American Engineers' Plans for Spanish Railways, 407
American Fatal Car Collision, 473
American Freight Car Efficiency and Car Builders' Association Rules, 97
American Railroads and Coal, Analysis of Kinds Used, 249
American Railway Authorities; Conference to Reduce Clerical Work, 473
American Railways—*see* also United States Railways and Inter-State Commerce Commission
Ames, Oakes and Oliver, Constructors of First Transcontinental Railway Over the Rockies, 207
Appointments and Changes of *Personnel* on Various Railways, 11, 33, 55, 77, 97, 184, 249, 337, 361
Argentine Government and Railway Supply Questions, 77
Association of Private Owners of Railway Rolling Stock, 73
Australian Commonwealth Railways Bill, Non-Political Control, 337
Australian East-West Railway, Cost, 451
Australian East-West Railway; Projected Exhibition to Celebrate Opening, 229

RAILWAYS AND TRAMWAYS (*continued*)

Australian East-West Transcontinental Railway; Approaching Completion and Subsequent Train Service, 33, 77, 229, 337
Bacteriological Car Laboratory Presented to French Army, 473
Bakerloo to Watford, Lengthened Trains, 497
Baltimore and Ohio Railway, Employment of Women, 42
Barrow-in-Furness, Deficiency of House Accommodation, Strain on Railways, 207
Beasley, Mr. A., Retirement from Taff Vale Managership and Appointment as Director, 33, 55, 97
Belgian Locomotives in France, 55, 77
Bombay, Baroda and Central India Company Builds Ambulance Trains, 67
Brazilian Purchase of Locomotives to Expedite Food Supplies to Allies, 519
British Railway Administration, Mr. Lynch's Questions, 451
Buffalo, Rochester and Pittsburg Scrap, Economical Treatment of Castings, 22
Burma Railways Company's Supplies for War Purposes, 561
Business or Pleasure, Overcrowded Travelling, 455
Butterworth, Sir A. Kaye, General Manager of North-Eastern Railway to Visit America on Behalf of the Government, 163
Cab Penny Toll Dispute Settled, 561
Cabs and Taxis and Railway Stations, Tolls, 163
Cabs Use of Railway Stations, Position Defined, 163
Caledonian Railway, Collision at Newton Colliery, Result of Inquiry, 55
California and other States; Level Crossing Regulations, 561
Cambrian Railway Company's Prizes for Well-kept Stations, 519
Canadian Dominion and the Maritime Provinces, Intercolonial Railway Completion, 33
Government Railways, New Rolling Stock, 229
Intercolonial and Prince Edward Island Railways' Postponement of Adoption of Uniform Gauge, 330
Northern Railway, Petition Against Government Purchase, 207
Northern Railway Taken Over by Government—Question of Grand Trunk Pacific Railway, 119
Pacific Railway's Projected Double-deck Bridge at Toronto, 33
Railway Association for National Defence, 519
Railway Combination and Removal of Rails to France, 119
Railway Commission, Cost of, 451
Railway Revenues, 141
Canal Control Committee, Annual Cost, 541
Canal Transport for Coal and Heavy Goods Traffic, to Relieve Railways, 361
Cape to Cairo Railway, Completion to Bukama on the Congo, 207
Cars Partly Loaded Only; Photographs Sent to Traders to Induce Economy in Use of Railway Facilities, 207, 249
Central Railroad of New Jersey, Economy in Card Passes, 473
Channel Tunnel Project, Government Support Refused during War, 163
Charing Cross Bridge Strengthening, Bill Passed, 11
Chemin de Fer du Nord, Change of General Manager, 11, 77
Chicago, Burlington and Quincy Railroad Accident, 385
Chicago, Milwaukee and St. Paul Company, Saving of Fuel Due to Electrification, 459, 541
Chicago and North-Western Railway and "Safety First" Post Cards, 33
Children's Home in Memory of South Indian Railway Engineer Killed in Action, 229
Clayton Aniline Company and the Lancashire and Yorkshire Railway, 271
Coal Consumption on the Chicago, Milwaukee and St. Paul Railroad, 163
Control and the Coming Winter, 97, 315
for London, Rail-borne and Sea-borne in 1914 and 1917, 11
Mines in Ireland and Railway Facilities 429
Pooling in United States: Avoidance of, Delay in Shiploading, 337
Rate Differences, Anomalies of Transport, 451
Transport Reorganisation in the North-West of England, 429
Transport Scheme, Great Saving, 497, 519
Wagons to and from Collieries, Investigation of Delays, 497
Wagons and Private Ownership, 315
Collection and Distribution of Goods, Reform Needed, 497
Concrete Disintegration in Linings of Railway Tunnels in America, 163
Copenhagen, New Underground Railway Stopped for Want of Material, 249
Crane Accident on Breakdown Work, 293
Death of Mr. William Smith, 361
Death of Old Engine-driver Due to Heat, 97
Death of Mr. W. R. Sykes, 293
Difficulties of Railway Service in War-time, 361
Dividends, Interim, of Certain Railways, 141
Drivers' and Guards' Difficulty in Regard to Food and Lodgings When Away from Homes, 97
Eastern Bengal Railway Survey for Ferry Boat Service on Jamuna River, 191
Economies of Railway Operation in America, Committee Appointed, 18
Economy and Free Travelling of Conference Delegates, 407
Electric Headlights Replace Oil on Baltimore and Ohio Locomotives, 451
Electric Locomotive Built in Manchuria, 519
Electrification of 211 Miles of the Chicago, Milwaukee and St. Paul Railroad, 271
Elmira Water, Light and Railroad Company and Repair of Armature Shafts, 77
Employers' Liability, Trial Ends in Verdict for the Railway, 497

RAILWAYS AND TRAMWAYS (*continued*):

Erie Railroad, Discontinuance of Numerous Passenger Trains, 77
Exhibition of Produce of Allotment Holders on the London and South-Western Railway, 229
Fares Increase on London Railways, 229
Fares Increase Unlikely to be Further Extended, 519
Federated Malay States Railways, Favourable Financial Position, 473
Fine for Letting Wagons on Hire Without Government Permit, 481
Fire Outbreak on Ammunition Train; Rewards for Courageous Work of Staff, 337
Flashlights at Level Crossings on the Furness Railways, Source of Economy as well as Safety, 519
Flowers for Manchester Hospitals, Railway Arrangement for Delivery, 141
Food Instruction Trains in the United States, 271
France, Northern Railway Chief Engineer Resigning Post, 11
Free Travelling for Army Reserve Munition Workers, 385
Free Travelling for Merchant Seamen Discharged at Other than Usual Port, 337
Freight Train Loads on Eastern Railways of United States, 249
French Railways, Percentage of Expenditure to Receipts, 292
Fuel for Locomotives, Report of Committee on Powdered Coal to International Railway Fuel Association, 33
Fuel Scarcity and Utilisation of Russian Schist for Locomotive Boilers, 451
"Full Crew" Rule in New Jersey, 519
Geddes, Sir Eric, First Lord of the Admiralty, Continuance of Relations with North-Eastern Railway, 207
Genoa to Milan Line, Great Loss of Life Due to Derailment of Express Train, 163
German Increased Railway Fares and Demurrage Charges, 229
Goods Storage and Handling in United States, Threatened Troubles, 185
Goods Traffic Increase under Government Control, 141
Government Appointments for Railway Officials, 119
Great Eastern Company Gives Facilities for Coal Storage for Use with Farm Machinery, 97
Great Indian Peninsula Railway, Opening of Parsik Tunnel near Kalyan, 33
Great Northern (U.S.A.) and Northern Pacific to Keep Posts for Enlisted Employees, 11
Guns *versus* Locomotive Manufacture, Beyer, Peacock and Co.'s Difficulties, 385
Haiderabad, Serious Railway Collision, 163
Harcourt-street Station, Dublin, Second Accident to Engine on Same Spot, 207
Highland Railway, Late Chief Engineer as Divisional Food Commissioner for North Scotland, 185
Horse Transport, Controller Appointed, 473
Illinois Central Line Speed Reductions and Resulting Losses, 497
India, Defence of, Government and War Transport Railway Facilities, 315
India, Design and Inspection of Girder Bridges, 407
India, North-Western Railway to Use Oil Fuel, 293
Indian Railways Supplies to Mesopotamia, Unexplained Loss, 163
Indian Traffic Controller Appointed, 141
Indo-Ceylon Connection Working at a Loss, 451
Injury Claim Refused on Ground of Negligence, 11
Injury to Employees, Notice to Men Seeking Employment, 11
Interavailability of Season and Traders' Tickets, Restrictions Withdrawn, 361
Interborough Rapid Transit Company's New York Traffic, 536
INTER-STATE COMMERCE COMMISSION:
Car Service Division Formed to Deal with Distribution Exchange and Return of Freight Cars, 163
Rates Increase, Application Renewed by Railway Companies, 385, 463
Trainload Statistics, 33
Irish Branch of the National Union of Railwaymen, 315
Collieries and Need of Railways, 97
Munition Workers and Christmas Travelling, 429
Permanent Way Men Returned from France to Ireland, 77
Railway Engineers' Strike, 33
Railway Men's War Bonus Increased to English Level, 229
Railways Claims in Respect of Rebellion of Easter, 1916, 519
Railways Exempt from 50 per Cent. Increase in Fares, 163
Railways, Wagon Demurrage Regulations, 206
Seaside Resorts and Limited Travelling, 55
Train's Remarkable Speed, 315
Italian Coal Scarcity Involves Train Reduction, 497
Italian Government Increase in Railway Fares, 519
Italian Minister of Transportation, 11
Italian State Railways, Satisfactory Finance, 249
Japanese Mission to Study American Transport and Industrial Conditions, 519
Kentucky Coalfields and the Virginian Railway, Suggested Purchase by United States President, 207
Kobe's Elevated Railway, 561
Leeds and Liverpool Canal Company and Government Control, 293
Lewis, J. T., S. Indian Railway Engineer Killed in Action, Children's Home in Memory of, 229
Light Railway Commission, Retirement of Colonel Boughey, 361
"Limited Mail," Origin of Term, G. P. Neele, 229
Live Stock at Large on Texas and Pacific Railroad, 211

RAILWAYS AND TRAMWAYS (*continued*):

Live Stock Trespassing on American Railways, Action by all Companies, 249
Liverpool, Increase in Railway Haulage Charges, 271
Locomotive and Railway Material, Exports from the United States, 249
Locomotives for Burning Pulverised Fuel, 33
London and North-Western Hotel at Birmingham, Extensions, 193
London and North-Western Railway *versus* J. Sankey and Son, Carriage of Wheels, 55
London and North-Western Railway, War Casualties, 229
London and North-Western Railway, Decorations, 519
Louisville and Nashville Railroad and Western Union Telegraph Company's Poles, United States Government Intervenes, 97
Madrid to Construct Electrical Underground Railway, 185
Manchester Train Service Changes, Midland Railway, 429
Mechanical Stokers on Baltimore and Ohio Railroad, 385
Melbourne, Railway Electrification in, 451
Meyrick Park, Bournemouth, Halt Closed, 407
Midland Railway Collision at Derby, 407
Midland Railway, Derailment of Passenger Train, 271
Motor Cars and Unprotected Railway Crossings, Tennesee Law, 229
Moving Trains, Fatalities Caused by Entering and Leaving, 229
Munition Work in Indian Railway Shops, Increase of Employees, 229
NATIONAL UNION OF RAILWAYMEN:
Annual Report, 97
Air Raid Demands, 519
and Board of Trade, 293
Deaths in Action or from Wounds, 185
and Mr. J. H. Thomas, 293
Mr. J. H. Thomas' Autobiography, 451
Newfoundland, Four Hundred and Twentieth Anniversary of Discovery, 293
New Jersey and Discontinuance of Numerous Trains by Erie Railroad, 77
New Jersey Public Utilities Commission and Curtailment of Train Service, 168
Newport Light Railways Order, 419
New South Wales, Increased Railway and Tramway Rates, 356
New South Wales Railways, Increased Outlay, 451
New York, New Haven and Hartford Railroad, Reduction in Passenger Trains, 141
New York, New Haven and Hartford Railroad, Successful Financial Management and Retirement of President, 10
New York State, Rapid Transit System, 153
New Zealand Locomotive, Satisfactory New Type, 527
New Zealand, New Rolling Stock, 561
New Zealand Railways, Traffic Statistics, 385, 429
New Zealand, Trolley Accident in Tunnel, 141
North British Railway Company Increases Salaries and Pays Income Tax of Staff, 207
North-Eastern Railway Allotment Holders and Goat Keepers, 271
North-Eastern Railway, General Manager to Visit America, 163
Northern Pacific Railway Dining Car and the War, 42
Oil, Domestic Production, Broxburn Oil Company and the North British Railway, 11
Oil Shortage and Gas-lighted Railway Carriages, 397
Oil Substituted for Coal on the Western Indian Locomotives, 519
Open Cars for Transport of Goods, Use Forbidden Except for Public Service, 541
Overcrowding at Business Hours, Increased Train Service, 385, 455, 497
Overcrowding on Suburban Lines, 429
Oxted Tunnel Failure and Re-opening, 97
Panama, Projected Railway on Atlantic Coast, 55
Parcels Traffic and Stamp System, 508
Pennsylvania and New York Central Railroads' Reduction of Passenger Trains, 97
Pennsylvania Railroad Improvements, Suggested Electrification, 83
Pennsylvania Railroad, Men of Foreign Birth, Analysis; Purchasers of Liberty Bonds, 473
Pennsylvania Railroad and Military Service, 315
Perishable Traffic in America, Wagons in Sidings, 407
Permanent Way, New Type, Demonstration at Townsville, Queensland, 561
Peru, American Locomotives Preferred by, 141
Peru, New Railway to be Financed in New York, 119
Porters' Tips and Compensation Question, 519
Prosser, Mr. E. A., Manager of Taff Vale as well as of Cardiff and Rhymney Railways, 33
Queensland Government Railways, Investigation, 337
Queensland Government Railways Report, 561
Rails, Steel, Manufacture in South Africa, Trade Impetus Due to War, 229
RAILWAY BENEVOLENT INSTITUTION:
Increased Income, 11
Prince of Wales as President, 77
Railway and Canal Commission Court, Trials Postponed to End of the War, 97
Clerks, Male and Female Wages Increase, 561
Clerks' War Bonus and Superannuation, 271
Crossing Sign in South Carolina, Use as Advertisement Forbidden, 33
Engineer Regiments for France, Nine Called for in the United States, 15
Executive Committee's Agreement with Men's Union as to War Wages, 141
Material Exported from the United Kingdom, 11, 77, 185, 315, 385, 497

RAILWAYS AND TRAMWAYS (*continued*):

Railwaymen's Fifth Increase in Pay since War Began, 119
Men's Further Advance in Pay, 473, 497
Men's Pay and Government Agreement, 519
Officials Lent to Government but Paid by the Railways, 207
Purchase in the United Kingdom, 541
Returns for 1913, Last Published in Complete Form, 229
Shopmen's War Bonus, 33, 119
Workers' Wages, New Adjustment, 185
Railways, Future of, Under Consideration by Board of Trade, 429
Reduction in Train Services, 119
Reduction, Further, in Train Services Improbable, 519
Risk Rates and Companies' Responsibility, 561
Road, Rail and Water Transport in France, 541
Russian Railway Improvements, 451
Russian Road-beds, Russian Railway Working Difficulties, 293
"Safety First" Competition for London Drivers, 249
St. Pancras Station, Wholesale Thefts from, 473
Sao Paulo and Boituba Lines, Conversion to Electric Traction, 429
School Holidays and Railway Travelling, 385
Season Ticket Irregularities; Greater Strictness Enforced, 315
Season Ticket Price Increase and Government Control, 429, 519
Season Tickets to East London Stations, 77
Season Tickets Inter-Availability, 11, 361
Selous Siding, Rhodesian Railways, 55
Shire Highlands Railway, Survey for Extension from Blantyre to Lake Nyasa, 207
Signalling and Engine Head Lights Colour Confusion, 361
Signalling, Great Need for Automatic System to Prevent Accident, 271
Signals, Colour Experiments on Different Lines, 337
Skilled Railwaymen and War Services, 315
Soldiers' Fatal Train Accident in Yorkshire, 249, 271
Soldiers' Leave and Travelling by Train, 141
Soldiers' Week-end Travelling, Regulations, 497
South African Finance, Increased Revenue from Railways and Harbours, 51
South African Government Order for Superheater Mountain Type Locomotives, 33
South African Railway Stores, Improved Methods, 407
South African Railways Engine Shortage and Traffic Restrictions, 429
South African Railways Signalling Installations, 407
South-Eastern and London, Dover and Chatham Companies' Dividends, 97
South Indian Railway Company and Ceylon Government, 451
Soutnern Pacific, Cheap Transportation of Goods, 293
Southern Pacific Company's Short Cut Across the Great Salt Lake, 541
Southern Railway Discourages Negro Emigration from Southern States, 11
Southern Railway Record of Safety, 163
Speed of Trains in United States, Evil Effect of Unnecessary Restrictions, 541
Stanley, Sir Albert, Presentation from Underground Companies to Former Managing Director, 53
State-owned Railways of the World Not One-third of Total, 55
Steel Substitution for Timber in Car Construction, Saving of Timber Effected, 541
Steel *versus* Wooden Coaches for United States Railways, 119
Stone Throwing at Trains, 315
Summer Train Services Abandoned, 54
Sweden's Great Shortage of Rails, 451
Swedish Transport Bureau to Control Rolling Stock, 119
Switzerland, No More Passenger Trains on Sundays, 271
Taff Vale, Cardiff and Rhymney Railways under Joint Managership, 33, 55, 77, 97
Telephone Tests on the Cleveland, Cincinnati, Chicago and St. Louis Railroad, 55
Theft of Goods in Transit, Railway Law, 337
Thefts of Goods from Railways, 249
Tie-plates Attachment to Sleepers, New Type of Plant, 11
Track and Bridge Reconstruction on South African Railways, 429
Track and Rolling Stock for Military Transportation in France, from United Kingdom, India, Australia and Canada, 11
Traffic between England and Wales and Scotland, No Choice of Routes, 519
Traffic Interchange between Furness and Other Railway Lines, 249
Train Overturned by Storm on Kohat Thal Railway, 77
Training of United States Troops, Assistance of the Long Island Railroad, 361
Trains and Railway Changes in October, 293
Tramcar, Fatal Derailment at Dover, 185, 429
Tramway Receipts Increase in the United Kingdom, 185
TRESPASSING ON UNITED STATES RAILWAYS:
"Disgraceful" Neglect of the Law, 541
Military Control and Reduction of Accidents, 22
Underground Routes between Certain Stations, Eastbound or Westbound as Preferred, 229
Union Steel Corporation of South Africa, Steel Rail Manufacture, 229
United States Cars Rebuilding, Large Amount of Timber Employed, 561
Census of Railroad Employees of Military Age, 541
Expeditionary Force in France Director-General of Transportation, 337
Government and Loans to Railways, 315

RAILWAYS AND TRAMWAYS (*continued*):
United States Government Supplies, Success of Transport Arrangements Due to Pooling of Cars, 337
Military Service and Railroad Labour Stress, 330, 385
National Defence, Rolling Stock or Additional Power and Terminals, 77
Passenger Train Economy, Results, 389
Passenger Train, Reduction and Coal Saving, 42, 77, 185, 389
Production of Rails, Greatly Increased Output, 185
Railway Dining Car Service and Food Saving, 541
Railway Employees Not Exempted, as a Class, from Military Service, 141
Railway Equipment and Supplies, Enquiry by Mr. H. C. Hoyle, 385
Railwaymen's Wages Demand, Action by President Wilson, 451, 561
Railways Fiscal Year, 407
Railways, Mileage of Signalling and of Train Despatching by Telegraph and Telephone, 496
Traffic, Measures for Improvement and Coal Saving, 185
War Board's Appeal for Railroad Concentration on the War, 219
Victoria, Increase of Railway Fares and Freight Charges, 207
Victorian Government Railways, Superheaters and Fuel Saving, 185
Victorian Railways Working, Mr. T. R. Johnson Appointed as Commission, 33
Volunteers, Position of Railwaymen in the Event of Invasion, 473
Wagon Ropes, Railway, Pooled, 77
Wagons for Collieries: Board of Trade and Private Ownership, 300
Wagons for France Built in the United States, 451
Wardle, G. H., Rises from Clerk to Board of Trade Secretary, 185
War Gardens on the Pennsylvania Railroad, 315
War-office Department for Railway Control, Expenditure, 407
War Work Volunteers and Travelling Facilities, 429
Weight of Trains, Varying Methods of Calculation, 119
Western Australia, Railway Freight Shortage Due to Lack of Ships for Wheat Transport, 11
Western Australia Railway Wagons and the Vacuum Brake, 33
Western Australia, Traffic and Finance Statistics, 55
Women Employees for the Pennsylvania Railway, Preliminary Inquiry, 22
Women's Labour in Transport Work, 229
Women of the Midland Railway and the Rifle Club, 337
Women at Military Hospitals, Reduced Fares for, 271
Women as Permanent Way Gang on the Lehigh Valley Railroad, 271
Women as Special Constables on the Great Eastern Railway, 271
Wooden Cars for Passenger Trains in the United States, Steady Withdrawal from Service, 119
Y.M.C.A. Work on United States Railway, Transport of Troops, 361
RAIN-MAKING Plant in Australia, 497
Refrigerating Stores Capacity in United Kingdom, 361
Reinforced Concrete—*see* Concrete
Research Work and Educational Scheme for Benefit of Cotton Industry, by Messrs. Tootal, Broadhurst, Lee and Co., 207
Resources of Iron—*see* Iron
Reversing Mill, Electrically-driven, Recently Installed, 77
Road Vehicles, Mechanically-propelled, Large Increase, 361
Roads and Tarspraying, Details of Labour and Material, 337
Rope Drive, Longest Known Life of, 519
Rope Drive, World's Highest Velocity, 519
Rotary Flying Engines, American Want of Success in Production of, 519
Rubber, Synthetic, Manufacture by Germany, 97
Russian Cotton Seed Oil Industry, 185
Russian Exhibition, 118
Russian Oil Production, High Rate in Spite of Labour Shortage, 33
Russia's Pre-war Industries, British Capital Employed, 33

S

ST. PAUL'S Cathedral, Strengthening of Piers of Transept, 207
Salt Production in Russia, Analysis of, 163
Salt Roadway in Utah, Advantages of, 473
Sanitary Work in the Army, Major A. J. Martin, 328
Scientific and Industrial Research Department's New Address, 77
Searchlight Improvements and Experiments in Germany, 77
Seine Improvements, to Check Floods and Aid Navigation, 141
Sewage Plant in America, Activated Sludge Compared with Percolating Filters, 561
Sheet Metal Industry, Employers' Joint Committee Meeting, 420
Shell Forgings, Temperature Considerations, 249
Shell Output in America, 97
Shells, Immensely Increased Output, 33
Shells Used in Capture of Messines, Estimated Weight of Steel, 33

SHIPS AND SHIPPING MATTERS:
American Shipbuilding *versus* German U-boats, 234
American Steamers Converted to Diesel-engined Ships, 82
Cadiz, Abandoned Shipbuilding Yard to be Re-opened, 185
Canvas as Auxiliary in Steamships Not Required in Diesel-engined Vessels, 207
Charts, Serious Errors Discovered, 407
Concrete Ship Designed at San Francisco, 119
Concrete Ships, Advantages and Cost, 185
Diesel Engines for Submarines in the United States Navy, Attempt to Dispense with Air Starting Valves, 163
Durban, Electric Coaling Plant of New Design, 429
German Diesel-driven Motor Ship Wilhelm A. Riedermann, 429
German Submarines, Size and Number Stated to be Much Exaggerated, 207
Hong-Kong Shipping Analysis, Increase of Vessels Using the Port, 185
Hulls of Sea-going Vessels, Composition for Dressing, 561
Italian Measures Against Submarine Attack and for Re-construction of Mercantile Marine, 225
Japan, Absence of Pleasure Boating and Small High Speed Petrol Motors, 55; (Letter), 384
Japanese Ports, Percentage of Japanese and Foreign Vessels, 140
Japanese Ships Built at Tsurumi, Japan, Warships as well as Merchantmen to be Home Built, 163
Japan's Shipbuilding Capacity, Great Extension of, 385
Merchant Ships Under Construction in American Shipyards, 361
Norwegian Iron and Concrete Ship Launched, The First, 163
Nova Scotia's First Home Built Steel Ocean-going Steamer, 185
Panama Canal Terminals Supply Boats, 451
Russian 50-Ton Submarines, 175
Schooner Yacht America, Her Destination, 407
Shipbuilding Berth in Canada, Largest Enclosed for Canadian Vickers Limited, 361
Shipbuilding in the United States, Statistics, 55
Standard Ship, First Under War Conditions, Built at Chepstow, 541
Standard Steamers, Completed, Started and Sunk, 519
Standardised Ships of Cast Steel Constructed at Rate of More than One a Day, 207
Submarine Boat, First Recorded in 1640, 33
Submarine Chasers Ordered from United States for British and Italian Governments, 385
Submarine Detection by Megaphone, 519
Submarines, Exchange of Periscopes for Lenses on Either Side of the Vessel, 141
U-Boat Dangers, Suggestion to Net the North Sea, 141
U-Boats Failure to Impede Military Operations, 407
United States Call for American Sailors for their New Merchant Marine, 141
United States Collier Jupiter, Safe Arrival with Wheat Cargo in France, 33
United States Emergency Fleet, Details of Contracts, 33
United States Motor-driven Superdreadnought Tennessee, 249
United States New Dreadnoughts, 407
Warship Losses, Causes of, Comparison between Gunfire, Submarines and Mines, 207
Whitby, Prospect of Shipbuilding, 541
Wooden Ships to be Built in Canada, Steam-driven, 141
Wooden Ships 100 Years Old, 229
Wooden Vessels, Best Metal for Screw Shafts, 229

SIAM, Projects for Systematic Irrigation, 207
Silica Bricks, Superiority over Fireclay, 315
Silver's Increased Price, 293
Silvertown Works Fire, Exaggerated Report' 163
Slide Rule, Pamphlet on "Useful Engineers, Constants," &c., J. A. Burns, 260
Smokeless Fuel for United States Navy, 385
Soap Substitutes in Germany, 119
Soldiers and Sailors, Disabled, to be Employed on Gramophone Manufacture, Works Opened, 361
South Wales Miners and Taxes, 311
South-Western Polytechnic Institute, 154
Spanish Telephone System, Projected Extension, 141
Spanish Works for Home Supply of Ships and War Material, 119
Sparking Plug, Lenoir the Original Inventor, 77
Sparking Plug, Better Insulation Needed, A. Champion, 407
Stainless Steel Cutlery, Use of Chromium Stopped, 271
Stanley, Sir Albert, Former Underground Managing Director, now President of Board of Trade, 53
Steam Pressure for Steam Turbines, Increase in America, 497
Stone Falling to Centre of the Earth, Calculation of Time, M. Sanger, 141
Straw for Motor Fuel Gas, Canadian Chemist's Process, 385
Straw Pulp, Tested in Scottish Mills, 429
Street Accidents, Wonderful American Invention, 473
Submarine Cable, Largest in the World, 229
Suction Gas Plant in South Africa, Largest in Existence, 293
Sugar or Bananas in Jamaica, 97
Sugar, Motor Spirit and other Products from Mowra Flower, 119
Sulphur Recovery from Smelter Fumes, "Thiogen" Process, 229
Sweden, Proposed Government Grant for Grain Storage, 293
Synthetic Indigo Manufacture at Ellesmere Port, Dr. G. T. Morgan, 24

T

TAXATION of Motor Spirit, Import Duty During the War, 55
Taxes on Wages, South Wales Miners, 311
Tea-growing Increase in Nyasaland, 146
Tea Mixed with Iron and Steel Borings, 561
Telegram Round the World in 16¼ Minutes, *New York Times* Message, 141
Telegraph and Telephone Mileage in the Federated Malay States, 556
Telegraph, Modern, Principles of, Professor J. A. Fleming, 328
Telephone Exchange, The Work of, Professor J. A. Fleming, 328
Telephone Exchanges, Automatic, for Sydney, Cost of, 561
Telephone from Montreal to Vancouver, Record Length, 451
Telephone Signalling, Various Methods, 249
Telephone, Underground, "Continuously Loaded" Paper Core, in Shropshire, 97
Telephone, Underground, from Washington to New York, 315
Telescope at Mount Wilson Observatory, Much the Largest in the World, 249
Textile Factories, Source of Electric Power, 385
Tilbury Dock Enlargement, Completion, 33
Timber in Victoria, Investigation of Development and Best Time for Cutting Mountain Ash, 55
Tin Included in War Material Regulations, 561
Tin Mining in Cornwall, Percentage of Loss of Tin and Wolfram, 519
Tin and Tungsten in Wolfram, Separation by New Process, 361
Tin from Zaaiplaats Smelting Works, South Africa, 428
Titanium, Properties and Uses of, 541
Town Planning After the War, Professor S. D. Adshead, 328
Tractors, Farm, Varieties in the United States, 497
Tractors for Farm Work, Good Ploughing Result, 361
Tractors for Farmers, Government Assistance in Ontario, 55
Tungsten—*see* Iron and Steel
Turbines, Very Large Geared Marine, Construction in America, 33
Turbo-blowing Plant to Replace Beam Engines After Seventy Years' Constant Service, 337

U

U-BOATS With and Without Periscopes, 77
United States Army to Use Browning Automatic Rifle and the Lewis Gun, 163
United States Increased Output of Tractors, 249
United States Record Agricultural Programme, 293
United States Soldiers, Weight of Metal and Other Equipment Carried, 519
United States Standard Water-tube Boilers for Emergency Fleet, 519
University College, London, Awards of Scholarships and Diplomas, 66

V

VEGETABLE Matter in Waterways, Cleared by Mowing Machines from a Launch, 429
Victoria and Storage Silos for Wheat, 249
Viscometers, Need of Standardisation, 271

W

WAGONS, Steam, Smoke Nuisance in Sheffield, 33
War Conditions and New Industries, 561
War Truck, American, Details of, 561
Warehouse with Sixteen Acres of Floor Space, for New York Navy Yard, 451
Water Gas, Continuous Process, Aqvist and Helsing, 293
Water Jackets of Motor Car Engines, Filling up Cracks, 140

WATER SUPPLY:
Airdrie, Coatbridge and District Water Trust, Complaints of Deficient Supply, 361
Australia, Artesian Water Supply of, 385
Dartmoor to Plymouth, Success of New Water Main, 519
East London Water Supply from the Buffalo River, 141
Everett, Washington, Details of Scheme, 11
Filtered Water in the United States, Varieties of Filtration Plant, 407
Flow of Water in Wood-stave Pipe, F. C. Scobey, 271
Fluorine and Arsenic in Spring Waters, 385
Japan, Schemes for Water Supply at Tokio, 361
Lancaster's New Scheme for Supply, 163
Montreal Public Supply Sterilisation, 119
Rand Water Board Report, Record Sale Year, 293
Reservoir Cost in England and America, 561
Winnipeg Water Supply from Artesian Wells, 271
Wood Pipe for Silty Water, Suitable Velocity, 33
Wood-stave Pipe for Water Conveyance, 11

WEATHER Forecasts in the United States, High Average Correctness, 33
Welfare Work, Home Secretary's Proposals for Factories and Workshops, 97
Welland Ship Canal, Suspension of Work, 271
Westminster Bridge, Curiously Composite Structure, 119
Whale Steaks as Food on the Pacific Coast, 451
Wheat Storage in Silos, Victoria, 249
White Mineral Wool Manufacture from Basalt Rock near Melbourne, 271
Wire Rope Strain and Intelligent Lubrication, 77
Wire Ropes for Collieries, Factor of Safety, 271

WIRELESS TELEGRAPHY:
Detective Vessel for Wireless Spies and Hoaxers, 315
Japanese Station at Funabashi, Particulars of, 55
Lag in Wireless Time Signals, 429
Messages Picked up Over 11,000 Miles off, 229
Radio-telegraphy and Telephony, Medal of Honour Award, 77
Wireless Installations and "Jamming," 561

WOLFRAM from Burma, Increased Export, 293
Wood Block Paving, Cost Before and Since the Outbreak of War, 55
Wood, New Tropical, Valuable for Heat Insulation, 541
Wood Paving, Latest Practice in, 337
Wool, Pure White Mineral, Uses of, 385
Workmen's Clothing and Machinery, Numerous Fatalities, 33
Worms and Agricultural Land, 311

X

X-RAY Industry, British, Need of Capital and Skill, 33

Y

YEAST Used in Germany for Manufacture of Buttons, Knife Handles, &c., 97
Yokohama Pier Reconstruction, Completion, 337

Z

ZINC in "Gun-Metals" for Marine Engineering, 249
Zinc Works, Electrolytic, in Tasmania, 11
Zirconia, Raw and Purified, High Melting Point of, and Other Properties, 77

PRINTED FOR THE PROPRIETORS BY SYDNEY WHITE, AT THE OFFICE OF GEORGE REVEIRS, LIMITED, GREYSTOKE-PLACE, FETTER-LANE, E.C., AND PUBLISHED BY HIM AT THE OFFICE OF "THE ENGINEER," 33, NORFOLK-STREET, STRAND, IN THE PARISH OF ST. CLEMENT DANES, IN THE COUNTY OF MIDDLESEX.—FRIDAY, FEBRUARY 1, 1918.